SWANKE HAYDEN CONNELL ARCHITECTS

WTCI-151-P

OFFICE COPY

MAYOR'S OFFICE OF EMERGENCY MANAGEMENT

7 World Trade Center

New York, New York 10048

Specification Manual

Issued for Review

100% C.D. Documents

THE PORT AUTHORITY OF N.Y. & N.J.
ENGINEERING DEPT. QUALITY ASSURANCE DIV.
DESIGN STANDARDS
APR 4 1998
W98-7134
RECEIVED
ALTERATIONS APPLICATION
TENANT CONSTRUCTION REVIEW UNIT

SHCA Project No. 5576A

April 6, 1998

Dwg's
Spec's
SUB
CAB. TUBE
6-A

Swanke Hayden Connell Ltd. / Swanke Hayden Connell Partners LLP
295 Lafayette Street, New York, New York10012
212 226-9696, Fax 212 219-0059

TABLE OF CONTENTS

DIVISION 1 - GENERAL REQUIREMENTS

01045	Cutting and Patching
01090	Definitions and Standards
01200	Project Meetings
01300	Submittals
01500	Construction Facilities and Temporary Controls
01600	Materials and Equipment
01631	Product Substitutions
01700	Contract Closeout

DIVISION 2 - SITE CONSTRUCTION

02070	Selective Demolition

DIVISION 3 - CONCRETE

03300	Cast-In-Place Concrete

DIVISION 4 - MASONRY

04200	Unit Masonry

DIVISION 5 - METALS

05120	Structural Steel (Refer to Drawings)
05300	Metal Deck (Refer to Drawings)
05500	Metal Fabrications
05550	Sheet Metal Fabrications

DIVISION 6 - WOOD AND PLASTICS

06100	Rough Carpentry
06400	Architectural Woodwork

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07100	Sheet Membrane Waterproofing
07255	Fireproof Patching
07270	Firestopping
07410	Metal Wall Panels
07530	Membrane Roofing and Repairs
07600	Flashing and Sheet Metal
07900	Joint Sealants

DIVISION 8 - DOORS AND WINDOWS

08000 Door schedule
08110 Steel Doors and Frames
08210 Wood Doors
08305 Access Doors
08450 Metal and Glass Partitions
08710 Door Hardware
08800 Glass and Glazing

DIVISION 9 - FINISHES

09250 Gypsum Board Assemblies
09300 Tile
09511 Acoustical Ceilings
09515 Metal Ceilings
09520 Fabric Wrapped Panels
09525 Fiberglass Composite Ceilings
09600 Interior Stonework
09650 Resilient Flooring
09680 Carpet
09690 Carpet Tile
09700 Resinous Flooring
09900 Painting
09950 Wall Coverings

DIVISION 10 - SPECIALTIES

10100 Visual Display Boards
10160 Toilet Compartments
10200 Louvers
10270 Access Flooring
10522 Fire Extinguishers and Cabinets
10650 Operable Partition System
10800 Toilet and Bath Accessories
10900 Miscellaneous Accessories

DIVISION 11 - EQUIPMENT

11020 Security
11130 Audio Visual Equipment
11450 Pantry Equipment

DIVISION 12 - FURNISHINGS

12500 Window Treatment
12611 Workstations

DIVISION 13 - SPECIAL CONSTRUCTION

Not Required

DIVISION 14 - CONVEYING SYSTEMS

Not Required

DIVISION 15 - MECHANICAL

15100 - General
15110 - Piping Systems
15120 - Air Distribution Systems
15130 - Insulation
15140 - Acoustical Treatment & Vibration Isolation
15150 - Controls & Instrumentation
15190 - Miscellaneous
15310 - Fire protection Piping
15320 - Fire Protection Index
15330 - Standpipe and Sprinkler Systems and Equipment
15340 - Preaction & Miscellaneous Sprinkler Systems
15400 - Plumbing Index
15410 - Plumbing Piping
15440 - Plumbing Fixtures and Equipment
15445 - Plumbing Pumps
15450 - Insulation for Piping
15486 - Foundations, Vibration Isolation & Supports for Rigidly Supported Equipment (Seismic Design)
15991 - Testing of Systems
15996 - Miscellaneous Plumbing Systems

DIVISION 16 - ELECTRICAL

16050 - Basic Materials, Methods and Requirements
16400 - Service and Distribution
16500 - Lighting
16600 - Special Systems
16700 - Communications

DIVISION 17 - TELECOMMUNICATIONS

17600 - Telecommunications Cable Tray Specifications
17600A - Copper Telecommunication Cable Plant Specification
17600B - Copper and Fiber Optic Telecommunication Backbone Cable Plant Specification
17600C - Data, Cable TV and Miscellaneous Systems Infrastructure Specifications

END OF CONTENTS

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative and procedural requirements for cutting and patching.

B. Related Work Specified Elsewhere: Refer to other Sections for requirements and limitations for cutting and patching parts of the Work.

1. Requirements of this Section apply to mechanical and electrical installations. Refer to Division-15 and Division-16 Sections for other requirements for cutting and patching mechanical and electrical installations.

1.2 SUBMITTALS

A. Cutting and Patching Proposal: Where approval, by the Owner or Architect, of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed.

1. Approval by the Architect to proceed with cutting and patching does not waive the Owner's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.3 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching structural elements.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would reduce their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

C. Visual Requirements: Do not cut and patch exposed construction that would, in the Architect's opinion, reduce the building's aesthetic qualities, or show evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. Retain the original installer or fabricator to cut and patch shop fabricated or other exposed finish Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Unless otherwise indicated, use exposed materials that are identical to existing materials. If not available, use materials that visually match existing adjacent surfaces. Use materials whose installed performance will equal or surpass that of existing materials.

B. All materials proposed to be used shall be submitted to the Architect for approval prior to incorporation into the work.

PART 3 - EXECUTION

3.1 INSPECTION

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

3.3 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other work and perform fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut by using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch, after the patched area has received primer and second coat.

3.4 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01090 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative requirements for compliance with governing regulations, codes and standards.

1. Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with regulations, codes and standards.

2. Refer to General and Supplementary Conditions for requirements for compliance with governing regulations.

1.2 DEFINITIONS

A. General: Definitions contained in this Article are not necessarily complete, but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.

B. Indicated: Refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference; no limitation on location is intended except as specifically noted.

C. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Owner or Architect", "requested by the Owner or Architect", and similar phrases. However, no implied meaning shall be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.

D. Reviewed: The term "reviewed," where used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the

responsibilities and duties of the Architect stated in General and Supplementary Conditions. Such review shall not release the Contractor from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

E. Regulations: The term "Regulations" includes laws, statutes, ordinances and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work, whether they are lawfully imposed by authorities having jurisdiction or not.

F. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."

G. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, locked storage and similar operations."

H. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

I. Installer: An "Installer" is an entity engaged by the Contractor, either as an employee, subcontractor or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "Installer" means having a minimum of 5 previous Projects similar in size and scope to this Project, and familiar with the precautions required, and has complied with requirements of the authority having jurisdiction.

J. Project Site is the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other construction as part of the Project. The extent of the Project Site is shown on the Drawings.

K. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. This Article is provided to help the user of these Specifications understand the format, language, implied requirements, and similar conventions. None of the explanations shall be interpreted to modify the substance of Contract requirements.

B. Specification Format: These Specifications are organized into Divisions, Sections or Trade Headings based on the Construction Specifications Institute's 16-Division format and the MASTERFORMAT numbering system. This organization conforms generally to recognized construction industry practice.

C. Specification Content: This Specification has been produced employing conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Language used in the Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the full context of the Contract Documents so indicates.

2. Imperative Language is used generally in the Specifications. Requirements expressed imperatively are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted.

D. Assignment of Specialists: The Specification requires that certain specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and the assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

1. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

1.4 DRAWING SYMBOLS

A. Graphic symbols used on the Drawings are those recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., eighth edition.

B. Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical Drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by more specific symbols recommended by technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to

the Architect for clarification before proceeding.

1.5 INDUSTRY STANDARDS

A. Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the Contractor must keep available at the Project Site.

1. Referenced standards take precedence over standards that are not referenced but recognized in the construction industry as applicable.

2. Unreferenced standards are not directly applicable to the Work, except as a general requirement of whether the Work complies with recognized construction industry standards.

B. Publication Dates: Where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.

1. Updated Standards: At the request of the Architect, Contractor or authority having jurisdiction, submit a Change Order proposal where an applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected. The Architect will decide whether to issue a Change Order to proceed with the updated standard.

C. Conflicting Requirements: Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Architect for a decision before proceeding.

1. Minimum Quantities or Quality Levels: In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to the Architect for decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entities' construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

2. Although copies of standards needed for enforcement of requirements may be part of required submittals, the Architect reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative and procedural requirements for project meetings including but not limited to:

1. Progress Meetings.

1.2 PROGRESS MEETINGS

A. General: Conduct progress meetings at the Project site at weekly intervals. Notify the Owner, Architect, and Landlord's Representative of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

B. Attendees: In addition to representatives of the Owner and Architect, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.

C. Agenda: Distribute copies of the agenda to all attendess before the meeting. Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, as necessary, to maintain the construction schedule.

3. Review open items, delivery dates and shop drawing status.

D. Reporting: No later than 3 days after each progress meeting date, the Contractor shall distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:

1. Contractor's construction schedule.
2. Submittal schedule.
3. Shop Drawings.
4. Product Data.
5. Samples.

B. Related Work Specified Elsewhere

1. Insurance certificates.
2. List of Subcontractors.
3. Inspection and test reports.

1.2 SUBMITTAL PROCEDURES

A. Contractor shall review the submittal to ensure and certify that they comply with requirements of Contract Documents before delivering them to the Architect. The Contractor shall so stamp drawings prior to submitting to the Architect.

B. Contractor shall not make submittals which are incomplete or which do not comply with the Contract Documents.

C. By approving and submitting shop drawings, product data, samples, etc., the Contractor represents: (i) that he has determined and verified materials, quantities, dimensions, specified performance criteria, catalog numbers, field measurements, field construction criteria, installation requirements, and similar data related thereto, or will do so with reasonable promptness; and, (ii) that he has checked, reviewed, and coordinated the information contained within each such submittal with other submittals and with the requirements of the Work and with the requirements appearing in the Contract Documents.

1. Data shown on submittals shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to permit the Architect to review the information.

2. At the time of each submission, the Contractor shall give the Architect specific written notice of each variation that the submittal may have from the Contract Documents.

3. The Contractor shall note on resubmissions revisions other than the revisions or corrections on previous submittals.

4. Submittals which do not conform to the requirements stated in the Contract Documents will be considered unacceptable, unless otherwise determined acceptable under the provisions specified herein.

5. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the Work in accordance with the requirements contained in the Contract Documents, even though submittals have been reviewed and accepted.

D. Deliver submittals via courier service, hand conveyance, post paid express mail, United Parcel Service or other equally good and sufficient pre-paid delivery.

1. Delivery time is part of the review and revision period of the Contractor or Architect initiating the delivery.

2. Charges in connection with the delivery of submittals to Architect's office or where directed by the Architect shall be paid by Contractor.

3. Submittals received after 3:00 P.M. will be logged in and considered received the next business day.

4. Submittal going to the Architect's consultants shall be sent directly to the respective consultant with a copy of the transmittal to the Architect. Architect shall determine which consultants shall receive direct submittals.

E. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

F. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

1. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.

2. If an intermediate submittal is necessary, process the same as the initial submittal.

3. Allow two weeks for report.

4. Inspection and test reports.

5. Allow two weeks for reprocessing each submittal.

6. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the work to permit processing.

G. Submittal of shop drawings, product data, samples, etc., specially prepared for the Work by any Subcontractor, manufacturer, supplier, or distributor shall be made through the Contractor.

H. Calculations as submitted shall be certified by a Professional Engineer registered in the State of New York and shall convey, or be accompanied by sufficient information to completely explain the structure, machine or system described and its intended manner of use.

1.3 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar- chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".

2. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.

3. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.

4. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.4 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.

1. Coordinate submittal schedule with the list of subcontracts, and the list of products as well as the Contractor's construction schedule.

2. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:

Scheduled date for the first submittal.
Related Section number.
Submittal category.
Name of subcontractor.
Description of the part of the Work covered.
Scheduled date for resubmittal
Scheduled date the Architect's final release or approval.

B. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Landlord's Representitive, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SHOP DRAWING & PRODUCT DATA PROCEDURES

A. Shop Drawing Requirements: Shop Drawings shall show design, materials (kind, thickness and finish), dimensions, connections, and other details necessary to insure that they accurately interpret Contract Drawings and Specifications and also show adjoining work in such detail as required to provide proper connection with same. Shop Drawings shall be numbered consecutively and insofar as possible shall be uniform in size.

B. Identification: All Shop Drawings and Product Data shall be identified with the name of the Project, building or buildings for which the Shop Drawings and Product Data are being submitted. Architect's name and Project Number, Contractor's name, Subcontractor's name, date of submittal, drawing number, revision number and date of each revision, if any, as well as the Specification Section under which the work is to be performed and the Drawing and detail numbers that relate to the Shop Drawings and Product Data.

C. Transmittals: All Shop Drawings and Product Data shall be accompanied by a letter of transmittal from the Contractor setting forth the same identification information as required. Contractor shall number transmittals consecutively in sequence with the sample transmittals and shall indicate the Submittal Procedure number being followed. Transmittal shall also indicate if Shop Drawing is resubmittal and note Architect's file number for original submittal.

D. Submittal Procedures: The Contractor shall submit copies of Shop Drawings and Product Data to the Architect and the Engineer in accordance with Submittal Procedure number listed below. Reproducible prints shall be sepias or ozalid prints with positive side up. Prints shall be black or blue line on white background.

1. Submittal Procedure No. 1 - Architectural Shop Drawings: One reproducible print and two black and white prints submitted directly to Architect.

2. Submittal Procedure No. 2 - Structural, Mechanical and Electrical Shop Drawings: One reproducible print and three black and white prints submitted directly to appropriate Engineer and a copy to Architect.

3. Submittal Procedure No. 3: When Product Data is submitted in the form of brochures, manufacturers' standard drawings, or catalog cuts not readily available in reproducible form, seven (7) copies of each shall be submitted directly to the Architect; additional copies shall be furnished only upon request by the Architect.

E. Architect's Distribution & Stamp: Following the Architect's review of each Shop Drawing submission, the Architect will retain the black and white prints, and return the reviewed reproducible print to the Contractor with the Architect's stamp and signature affixed thereto, annotated as follows:

1. 'Reviewed': 'Reviewed' means the submission has been reviewed for conformance with design concept. Construction, fabrication and/or manufacture can proceed subject to the provision that the work shall be in accordance with the requirements of the Contract Documents. Final acceptance of the work shall be contingent upon such compliance.

2. 'Reviewed and Corrected': 'Reviewed and Corrected' means the submission has been reviewed for conformance with the design concept subject to notations by the Architect on the returned Shop Drawings. Construction, fabrication and/or manufacturer can proceed subject to the provision that the work shall be carried out in compliance with all annotations and/or corrections indicated on the returned Shop Drawings and Product Data and in accordance with the requirements of the Contract Documents. Final acceptance of the work shall be contingent upon such compliance.

3. 'Revise and Resubmit': 'Revise and Resubmit' means that the Contractor shall revise and resubmit the Shop Drawings and Product Data in accordance with all annotations and/or corrections indicated therein. Construction, fabrication and/or manufacturer cannot proceed unless written certification by Contractor of acknowledgemnt of future rejection and redo of the work at no cost to the Owner. Shop Drawings and Product Data bearing "Revise and Resubmit" stamp shall not be permitted on the Project Site.

4. 'Resubmit': 'Resubmit' means that the submission is rejected for nonconformance with the design concept and the Contractor shall make a new submittal which shall comply with the requirements of the Contract Documents. Construction, fabrication and/or manufacture cannot proceed. Shop Drawings and Product Data bearing 'Resubmit' stamp shall not be permitted on the Project Site.

F. Contractor's Distribution: When transparencies are returned 'Reviewed' or 'Reviewed and Corrected', the Contractor shall obtain and provide such number of prints of the transparency as may be required for his distribution. The Contractor shall have copies of all 'reviewed' or 'Reviewed and Corrected' Shop Drawings and Product Data at the Project site at all times and shall make them available to the Architect's representatives and Landlord's Representitive.

G. Cost of Submittal and Distribution: All charges in connection with the delivery of Shop Drawings and Product Data to the Architect shall be paid by the Contractor. All charges in connection with the distribution of Shop Drawings and Product Data to the Sub-Contractors shall be paid by the Contractor. All charges in connection with the distribution of Shop Drawings and Product Data from the Contractor to their trades and subcontractors shall be paid by the Contractor.

1.6 COMPOSITE DRAWINGS

A. In the interest of coordination and expediting the Work in all areas, the Contractor shall prepare and submit to the Owner's Representative composite drawings embodying the Work of the various trades and/or subcontractors involved.

B. After review, the Owner's Representative shall distribute prints of reviewed composite drawings to affected trades and/or subcontractors. Require that involved trades and/or subcontractors cooperate in preparation of the composite drawings to assure proper coordination between trades and/or subcontractors. Participating trades shall indicate their approval on these composite drawings.

C. Prepare composite drawings and installation layouts when required to solve field conditions. Such drawings shall include dimensioned plans, sections and elevations, shall indicate layout and dimensions of ductwork with relationship to plumbing, heating, and chilled water piping, and shall give complete information, particularly size and location of sleeves, inserts, attachments, openings, and structural interferences.

D. Prepare composite drawings at a scale of not less than 3/8 inch equals 1 foot. Show components at verified field locations. Insure allocation of adequate space for clearance, connection, maintenance, and accessibility.

E. On composite drawings, include the following:

1. Building structure; finishes and access doors.

2. Piping systems, including valves and hangers.

3. Ductwork, including dampers and hangers.

4. Electrical distribution, including pull boxes.

5. Mechanical and electrical equipment.

6. Note the sequence of installation when necessary.

7. Composite drawings and field installation layouts shall be coordinated in the field by designated Contractor and subcontractors for consistency and proper installation relationships based on field conditions. They shall be checked for accuracy and approved by affected subcontractors, trades, etc., before submission.

1.7 SAMPLE PROCEDURES

A. Sample Requirements: When possible, all samples required for a particular Specification Section shall be submitted together.

1. Samples shall be submitted from the same source which will supply the actual job. Samples shall be of adequate size to show quality, type, color, range, finish, texture and other specified characteristics.

2. Samples of materials or products which are normally furnished in containers or packages, which bear descriptive labels and/or application or installation instructions, shall be submitted with such labels and/or instructions.

B. Identification: All Samples shall be labeled, tagged, or otherwise clearly identified. Labels or tags shall set forth the name of the Project, building or buildings for which the Sample is being submitted, Architect, Contractor, Subcontractor, and/or supplier, the name of the manufacturer, fabricator, or processor, the trade designation, grade and quality of the material or product, the date of submittal, and specific identification of each sample and a precise reference to the Specification Section, Article and paragraph wherein the material, product, or element of the work is specified. Each label or tag shall have sufficient clear space to permit the application of the approval stamp of the Contractor and the action stamp of the Architect.

C. Transmittals: All Samples shall be accompanied by a letter of transmittal from the Contractor setting forth the same identification information as required above. Contractor shall number transmittals consecutively in sequence with the Shop Drawings and Product Data transmittals. Where appropriate, test data and/or manufacturers' certificates shall be referenced in and forwarded with the letter of transmittal. Samples without accompanying certificates or test data will be returned without action.

D. Submittal Procedure: The Contractor shall submit the number of samples as indicated below:

1. In the event that a range of variations in texture, graining, color or other characteristics may be anticipated in furnished materials, assemblies, or elements of the work, a sufficient number of samples of such materials or products shall be submitted to indicate the full range of characteristics which will be present in the materials or products proposed for the work. Any such materials or products delivered or erected prior to approval of full range samples shall be subject to rejection.

2. All samples shall be submitted in triplicate to the Architect's home office, or where directed by the Architect, except as otherwise set forth in other Sections of the Contract Documents.

E. Architect's Distribution & Stamp: Following the Architect's review of each Sample submission, the Architect will return one samples of each set of samples to the Contractor with the Architect's stamp and signature affixed thereto and annotated in a manner conforming to the convention established herein above. Range samples will be treated in a manner consistent with submittals.

F. Contractor's Distribution: When Samples are returned 'Reviewed' or 'Reviewed and Corrected', the Contractor shall retain such Samples in a suitable place at the Project site for use by the Contractor, his Subcontractors, other contractors, the Architect and his authorized representatives to insure that all work is being installed in accordance with these Samples. The remaining Samples will be retained by the Architect.

G. Cost of Submittal and Distribution: All charges in connection with the delivery of Samples to the Architect shall be paid by the Contractor. All charges in connection with the distribution of samples from the Contractor to their trades and subcontractors shall be paid by the Contractor.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

1. Temporary utilities generally include:

   a. Temporary electric power and light.
   b. Telephone service.

2. Temporary construction and support facilities generally include:

   a. Field offices and storage sheds.
   b. Sanitary facilities, including drinking water.
   c. Temporary enclosures.
   d. Waste disposal services.
   e. Construction aids and miscellaneous services and facilities.

3. Security and protection facilities generally include:

   a. Temporary fire protection.

1.2 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. Building Code requirements.
2. Health and safety regulations.
3. Fire Department regulations.
4. Building Management Regulations.
5. OSHA Construction Regulations.

B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Electrical Service: Comply with New York City Code and UL standards and regulations for temporary electric service. Install service in compliance with New York City Code.

1.3 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site. Coordinate and comply with the requirements of the Base Building Contractor.

B. Cost of Use: The Owner shall pay for the cost of power consumed. All other costs shall be paid for by the Contractor, including telephone service.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials or undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

2.2 EQUIPMENT

A. General: Provide new equipment or previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

C. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

D. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

E. First Aid Supplies: Comply with governing regulations.

F. Fire Extinguishers: Provide portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

2. Comply with New York City Fire Department Directive 5-64 for quantities required.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Connect to existing service.

1. Provide adequate capacity at each stage of construction.

B. Temporary Electric Power Service:

1. Power Distribution System: Install wiring where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

2. Where the building power is not adequate for condtruction operations, provide portable power as required to execute the work.

C. Temporary Lighting: Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.

G. Temporary Telephones and Fax: Provide temporary telephone and fax service for all personnel engaged in construction activities, throughout the construction period. Install telephone and fax on a separate line for each temporary office. Maintain fax and telephone service.

1. At each telephone, post a list of important telephone numbers. Update on a regular basis.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES

A. Locate temporary construction and support facilities for easy access.

B. Sanitary Facilities: These include temporary toilets, wash facilities and drinking water fixtures.

1. Provide toilet tissue, paper towels, cleaning compounds, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.

2. Toilets and Wash Facilities: Use of existing toilet and wash facilities may be permitted, so long as facilities are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to the condition prevalent at the time of initial use.

3. Drinking Water Facilities: Provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.

C. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with the requirements of the Building and Construction Guideline. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

D. Temporary Lifts and Hoists: Provide facilities for hoisting materials. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities. Use of existing building elevators are limited, coordinate with the Base Building Contractor of schedule and use of the elevators. Pay for all costs related to use of elevators, hoists and lifts.

1. Contractor shall be responsible for the cost of hoisting time reserved by the Contractor, either used or not used by the Contractor, in accordance with the Building Requirements.

E. Project Identification and Temporary Signs: Prepare required signs; install signs where indicated to inform the public and persons seeking entrance to the Project. Do not permit installation of unauthorized signs. No project identification or advertisement signs are permitted.

1. Temporary Signs: Prepare signs to provide directional information for construction personnel and visitors.

3.4 SECURITY AND PROTECTION FACILITIES

A. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.

4. Provide supervision of welding operations and similar sources of fire ignition as per the NYCFD regulations.

B. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

C. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, or that other undesirable effects might result. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

D. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

3.5 OPERATION, TERMINATION AND REMOVAL

A. Termination and Removal: Remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of the Contractor.

2. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

a. Replace air filters.

b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.

c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION

SECTION 01600 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. Related Sections

1. Submittals: Section 01300.

2. Definitions and Standards: Section 01090.

3. Product Substitutions: Section 01631.

1.2 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in the construction industry.

B. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

C. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

D. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.3 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

2. Equipment Nameplates: Provide manufacturer's standard plate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

   a. Name of product and manufacturer.
   b. Model and serial number.
   c. Capacity.
   d. Speed.
   e. Ratings.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

3. Deliver products in the manufacturer's original sealed container or other packaging, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

B. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

C. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

1. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.

2. Semiproprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.

   a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that may be used, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for an unnamed product.

4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

   a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

6. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

7. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.

   a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.

8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products. Anchor each product securely in place, accurately located and aligned with other Work.

   1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01631 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. Related Sections

1. Submittals: Section 01300.

2. Definitions and Standards: Section 01090.

3. Materials and Equipment: Section 01600.

1.2 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:

1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.

2. Revisions to Contract Documents requested by the Owner or Architect.

3. Specified options of products and construction methods included in Contract Documents.

C. General Substitution Requirements

1. The products, materials and equipment of manufacturers referred to in the Specifications and on the Drawings are intended to establish the standard of quality and design required by the Architect, however, products, materials and equipment of manufacturers, other than those specified, may be used, if equivalent and approved by the Architect prior to Bid acceptance. as a rule substituions will not be permitted.

2. It is deemed that the term 'or approved equal' is not included after all products, materials and equipment referred to in the Specifications or on the Drawings.

3. The Architect will be the sole judge of equivalency of proposed substitute products, materials, and equipment. The Architect will make written recommendation of acceptance or rejection to the Owner. The Owner will then issue to the Contractor written approval or rejection of the substitution.

4. If the Contractor desires to use a substitute item, he shall make application to the Architect in writing in sufficient time (having regard to the progress of the work, the period of delivery of the goods concerned and adequate time for the Architect's review) stating and fully identifying the proposed substitute, cost changes (if any), and submitting substantiating data, samples, brochures, etc. of item proposed. It is the Contractor's responsibility to provide sufficient evidence by tests or other means to support any request for approval of substitutions.

5. Prior to proposing any substitute item, the Contractor shall satisfy himself that the item he proposes is, in fact, equal to that specified, that it will fit into the space allocated, that it affords comparable ease of operation, maintenance and service, that its appearance, longevity and suitability for the climate and use are comparable to that specified, and that the substitution is in the Owner's interest.

6. The burden of proof that a proposed substitution is equal to a specified item shall be upon the Contractor, who shall support his request with sufficient test data and other means to permit the Architect to make a fair and equitable decision on the merits of the proposal. Any item by the manufacturer other than those cited in the Contract Documents, or of brand name or model number or of generic species other than those cited in the Contract Documents will be considered a substitution.

7. Materials and methods proposed as substitutions for specified items shall be supported by certification of their acceptance for use by any authority, person or persons having jurisdiction over the use of the specified material or method.

1.3 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received prior to the acceptance of Bids. Requests received after acceptance of the Bids may be considered or rejected at the discretion of the Architect.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

   a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.

   b. Samples, where applicable or requested.

c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.

e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

f. Cost information, including a proposal of the net change, if any in the Contract Sum.

g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of Contract Documents.

3. The request is timely, fully documented and properly submitted.

4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Inspection procedures.
2. Project record document submittal.
3. Operating and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.
6. Punchlist items.

B. Related Work Specified Elsewhere: Closeout requirements for specific construction activities are included in the appropriate sections in Divisions 2 through 16.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.

    a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise Owner of pending insurance change-over requirements.

3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases. Submit copies of all permits and operating certificates to Landlord Representative.

5. Submit record drawings and maintenance manuals.

6. Deliver tools, spare parts, extra stock, and similar items.

7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions. Permanent keying of locks by landlords staff or landlords approved locksmith.

8. Complete start-up testing of systems, and instruction of the Owner's and Landlord's Representative's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

9. Complete final clean up requirements, it being understood that touch-up painting, shall be items for inclusion in the punch list with respect to the work. Touch-up repair and restoration of marred exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.

2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.3 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Subject to the above mentioned exceptions, submit an updated final statement, accounting for final additional changes to the Contract Sum.

3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.

4. Submit consent of surety to final payment.

5. Submit a final liquidated damages settlement statement.

6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

2. If necessary, reinspection will be repeated.

3. Copy of Architects certificate of final acceptance to Landlord's Representitive.

1.4 RECORD DOCUMENT SUBMITTALS

A. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

B. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1. Upon completion of mark-up, submit complete set of record Product Data and Shop Drawings to the Architect for the Owner's records.

C. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

E. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Recommended "turn around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.
8. Fixture lamping schedule.

F. Copy of record submittals to the Landlord's Representitive.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel and Landlord's Representitive to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".

B. Cleaning: The employ experienced workers to clean each surface or unit to the condition expected in normal, commercial building cleaning. Comply with manufacturer's instructions.
Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Remove labels that are not permanent labels.

2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace damaged glass.

3. Clean exposed finishes to a dust-free condition, free of stains, films and similar foreign substances. Vacuum carpeted and similar soft surfaces.

4. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps. Relamp fixtures that have been used for extended period of time.

5. Clean resilient floors by cleaning with a damp mop, then machine buff dry to a sheen. Wash ceramic tile and dry to a sheen.

6. Clean permanent filters of ventilating equipment and replace disposable filters for items used during construction. Clean ducts, blowers and coils of units that were operated without filters and are dust laden.

C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

D. Compliance: Comply with authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

SECTION 02070 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: The Work of this Section generally includes, but is not necessarily limited to, the following:

1. Removal of existing partitions and similar wall construction as indicated, and as required to accommodate the proposed construction.

2. Removal of existing soffits and ceiling construction as indicated, and as required to accommodate the proposed construction.

3. Removal of existing finishes required to accommodate the proposed work.

4. Removal of existing doors and door frames, as indicated.

5. Removal of existing plumbing fixtures and other mechanical equipment, as indicated on the drawings.

6. Other structures and construction, including cutting, and similar procedures as required to complete the Work.

7. Legal disposal of demolished materials.

B. Related Sections

1. Section 01045 - Cutting and Patching.
2. Section 01500 - Construction Facilities & Temporary Controls.
3. Section 06100 - Rough Carpentry.
4. Section 07510 - Membrane Roofing and Repairs.
5. Section 09250 - Gypsum Board Assemblies.
6. Divisions 15 and 16 - Mechanical and Electrical Work.

1.2 DEFINITIONS

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.

B. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.

C. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.3 SUBMITTALS

A. Schedule: Submit schedule indicating proposed methods and sequence of operations for selective demolition work to Owner's Representative for review prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.

1. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.

1.4 JOB CONDITIONS

A. Occupancy: Other tenants will be occupying areas of the building immediately adjacent to areas of selective demolition.

1. Conduct selective demolition work in manner that will minimize need for disruption of building operations and other tenants.

2. Provide minimum of 72 hours advance notice to Owner of demolition activities.

B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

1. Conditions existing at time of commencement of contract will be maintained insofar as practicable.

C. Protections: Provide temporary barricades, closures and other forms of protection as required to protect personnel and general public from injury due to selective demolition work.

1. Construct temporary insulated solid dustproof partitions in area where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors.

a. In addition to requirements above, construct exterior temporary enclosures to remain watertight.

2. Refer to Section 01500 - Construction Facilities and Temporary Controls.

D. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

E. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with adjacent facilities.

F. Explosives: Use of explosives will not be permitted.

G. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

B. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions to structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Owner's Representative prior to starting work.

3.2 PREPARATION

A. Provide bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.

1. Cease operations and notify and the Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.

B. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.

C. Locate, identify, stub off and disconnect utility services that are not indicated to remain.

1. Provide by-pass connections as necessary to maintain continuity of service to other areas of building. Provide minimum of 72 hours advance notice to Building Management if shut-down of service is necessary during change-over.

3.3 SELECTIVE DEMOLITION

A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.

3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.

5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

8. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

9. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.

10. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

11. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

12. Break up and remove concrete slabs on grade, unless otherwise shown to remain.

13. Remove resilient floor coverings and adhesive according to recommendations of the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practices for the Removal of Resilient Floor Coverings" and Addendum.

14. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

15. Remove no more existing roofing than can be covered in one day by new roofing. Refer to Section 07510 - Membrane Roofing and Repairs requirements.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Transport and legally dispose of materials off site.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution.

2. Burning of removed materials is not permitted on project site.

3.5 CLEAN-UP AND REPAIR

A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.

B. Repair demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION

SECTION 04200 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide unit masonry in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Interior concrete masonry partitions, walls and similar construction.

2. Masonry reinforcing, anchors and similar accessories.

B. Related Sections

1. Section 05120 - Structural Steel.
2. Section 05500 - Metal Fabrications.
3. Section 07900 - Joint Sealants.
4. Section 08110 - Steel Doors and Frames.
5. Section 09700 - Resinous Flooring.
6. Section 09900 - Painting.

1.2 QUALITY ASSURANCE

A. Source for Masonry Materials: Obtain exposed masonry materials from one manufacturer for each different product required.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirements.

B. Shop Drawings: Submit shop drawings of reinforced masonry construction complete with details, reinforcing and other components. Shop drawings shall be prepared by, and approved (signed and sealed) by a Professional Engineer licensed in the State of New York.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units to prevent deterioration or damage due to contaminants, or other causes. Limit moisture absorption of concrete masonry units to less than the maximum percentage specified for Type I units.

C. Store cement off the ground, under cover and dry.

D. Store aggregates where grading can be maintained.

E. Store masonry accessories to prevent deterioration and avoid dirt.

1.5 PROJECT CONDITIONS

A. Protection of Work: During erection, protect partially erected walls and completed structures as recommended by the referenced standard.

B. Staining: Prevent grout or mortar or soil from staining exposed masonry. Promptly remove grout or mortar on masonry.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. General: Comply with referenced standards and other requirements indicated below for concrete masonry units. Provide special shapes where required for special conditions.

B. Concrete Block: Provide units complying with characteristics indicated below for Grade, Type, face size and exposed face. Provide controlled aggregate lightweight units unless otherwise indicated.

1. Grade: Grade N, Type 1, moisture-controlled units.

2. Size: Manufacturer's standard units with nominal face of 16" long x 8" high (15-5/8" x 7-5/8" actual) x thicknesses indicated.

3. Exposed Faces: Manufacturer's standard faces, matching Architect's sample.

4. Load-Bearing Block: ASTM C 90.

2.2 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I.

B. Hydrated Lime: ASTM C 207, Type S.

C. Aggregate for Mortar: ASTM C 144.

D. Aggregate for Grout: ASTM C 404.

E. Water: Clean and drinkable.

2.3 JOINT REINFORCEMENT, TIES AND ANCHORS

A. Materials: Comply with following requirements for basic materials and with requirements for each joint reinforcement, tie and anchor.

1. Zinc-Coated (mill galvanized) Steel Wire: ASTM A 82 for uncoated wire and with ASTM A 641 for zinc coating of Class 1; for interior masonry work, unless otherwise indicated.

B. Joint Reinforcement: Provide welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10', with prefabricated corner and tee units, and complying with requirements indicated below:

1. Width: Approximately 2" less than nominal width of walls and partitions, to provide mortar coverage of not less than 1/2".

2. Wire Size for Rods: 0.1483" diameter.

3. For single-wythe masonry provide ladder type with cross rods 16" o.c. and with single pair of side rods.

C. Anchor Bolts: Provide steel bolts with hex nuts and flat washers complying with ASTM A 307, Grade A, hot-dip galvanized to comply with ASTM C 153, Class C, in sizes and configurations indicated.

D. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

1. AA Wire Products Co.
2. Hohmann & Barnard, Inc.
3. Dur-O-Wal, Inc.
4. National Wire Products Corp.

2.4 MORTAR AND GROUT MIXES

A. General: Do not add admixtures; pigments, air entraining agents, accelerators, retarders, calcium chloride, water repellent agents, anti-freeze compounds or other admixtures, unless otherwise indicated.

B. Mixing: Combine and thoroughly mix cementitious materials, water and aggregates in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for job-mortar and ASTM C 1142 for ready mortar, of types indicated below:

1. Limit cementitious materials in mortar to portland cement-lime.

2. Use Type N mortar for masonry unless otherwise indicated.

D. Grout for Unit Masonry: Comply with ASTM C 476. Use grout of consistency which will completely fill grout spaces.

1. Use fine grout in grout spaces less than 2" wide.

2. Use coarse grout in grout spaces 2" or wider, if any.

2.5 MASONRY ACCESSORIES

A. Reinforcing Bars: ASTM A 615; billet steel of the size and grades indicated on the approved shop drawings.

B. Steel Lintels: Refer to "Section 05500 - Metal Fabrications," of these specifications.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cleaning Reinforcing: Before placing, remove loose rust, ice and other coatings from reinforcing.

B. Thickness: Build masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.

C. Openings: Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.

D. Cutting: Cut masonry units with motor-driven saws to provide clean, sharp edges. Use full-size units where possible.

1. Use dry cutting saws to cut concrete masonry units.

3.2 CONSTRUCTION TOLERANCES

A. General: Do not exceed specified tolerances.

B. Variation from Plumb: 1/4" in 10', or 3/8" in 20'.

C. Variation from Level: 1/4" in 20'.

D. Variation from Location: 1/2" in 20'.

E. Variation in Width: Minus 1/4" or plus 1/2".

F. Variation in Joint Size: Plus or minus 1/8", 1/2" maximum joint.

3.3 LAYING MASONRY WALLS

A. General: Layout walls for location and bond pattern, with uniform joint widths and to accurately locate openings, movement-type joints, returns and offsets. Avoid using less-than-half size units. Comply with all applicable building code requirements.

B. Pattern Bond: Lay masonry in running bond with vertical joint in each course centered on units above and below. Interlock masonry at corners. Do not use units with less than nominal 4" width.

C. Stopping and Resuming Work: Rack back 1/2-unit length in each course; do not tooth. Clean exposed surfaces of masonry, and remove loose masonry units and mortar prior to laying fresh masonry.

D. Built-In Work: Build in items specified under this and other sections. Fill in solidly with masonry around built-in items.

1. Fill space between hollow metal frames and masonry.

2. Where built-in items are in hollow masonry, place metal lath in the joint below and rod mortar or grout into cores.

3. Fill hollow masonry with grout 3 courses (24") under bearing plates, beams, lintels, posts and similar items.

3.4 MORTAR BEDDING AND JOINTING

A. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course and in all courses to be reinforced or filled with grout.

B. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.

C. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials.

D. Tool exposed joints slightly concave, unless otherwise indicated.

E. Remove masonry units that have been disturbed or need to be adjusted after laying; clean and reset in fresh mortar.

3.5 HORIZONTAL JOINT REINFORCING

A. Install continuous joint reinforcement with side rods embedded in mortar, with a minimum cover of 5/8" on exterior side of walls, 1/2" elsewhere. Lap reinforcement 6".

B. Reinforce walls with continuous horizontal joint reinforcing unless specifically noted to be omitted.

C. Provide continuity at corners and wall intersections with prefabricated "L" and "T" sections. Cut and bend reinforcement as recommended by manufacturer for continuity.

D. Space continuous horizontal reinforcing as required by code but not more than 16" o.c. vertically.

E. Reinforce masonry openings over 1'-0" wide with joint reinforcing in 2 joints immediately above lintels and below sills. Extend reinforcing 2 feet beyond jambs of openings.

3.6 ANCHORING MASONRY WORK

A. Provide a 1" space between masonry and structural members. Keep space free of mortar or other rigid materials.

B. Anchor masonry to structural members with flexible metal ties embedded in masonry joints and attached to structure.

C. Space masonry anchors not more than 24" o.c. vertically and 36" o.c. horizontally.

3.7 LINTELS

A. Install steel lintels specified in "Section 05500 - Metal Fabrications," in locations indicated.

B. Provide minimum bearing of 8" at each jamb.

3.8 INSTALLATION OF REINFORCED UNIT MASONRY

A. Construct formwork and shores to support reinforced masonry elements during construction.

1. Construct formwork to conform to shape, line, and dimensions shown. Make sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

1. Do not exceed the following pour heights for fine grout:

a. For minimum widths of grout spaces of 3/4 inch or for minimum grout space of hollow unit cells of 1-1/2 by 2 inches, pour height of 12 inches.

b. For minimum widths of grout spaces of 2 inches or for minimum grout space of hollow unit cells of 2 by 3 inches, pour height of 60 inches.

c. For minimum widths of grout spaces of 2-1/2 inches or for minimum grout space of hollow unit cells of 2-1/2 by 3 inches, pour height of 12 feet.

d. For minimum widths of grout spaces of 3 inches or for minimum grout space of hollow unit cells of 3 by 3 inches, pour height of 24 feet.

2. Do not exceed the following pour heights for coarse grout:

a. For minimum widths of grout spaces of 1-1/2 inches or for minimum grout space of hollow unit cells of 1-1/2 by 3 inches, pour height of 12 inches.

b. For minimum widths of grout spaces of 2 inches or for minimum grout space of hollow unit cells of 2-1/2 by 3 inches, pour height of 60 inches.

c. For minimum widths of grout spaces of 2-1/2 inches or for minimum grout space of hollow unit cells of 3 by 3 inches, pour height of 12 feet.

d. For minimum widths of grout spaces of 3 inches or for minimum grout space of hollow unit cells of 3 by 4 inches, pour height of 24 feet.

C. Provide cleanout holes at least 3 inches in least dimension for grout pours over 60 inches in height.

1. Provide cleanout holes at each vertical reinforcing bar.

2. At solid grouted masonry, provide cleanout holes at not more than 32 inches o.c.

3.9 REPAIR, POINTING AND CLEANING

A. General: Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units. Provide new units to match adjoining units and install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up joints to provide a neat, uniform appearance.

C. Final Cleaning: After mortar is thoroughly set and cured, clean masonry. Remove mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.

END OF SECTION

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide metal fabrications in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Loose lintels.

2. Miscellaneous steel framing, and supports.

3. Rough hardware.

4. Loose bearing and leveling plates.

5. Steel support assemblies for operable panel partitions.

6. Steel support assemblies for interior mechanical, electrical and telecommunication utilities, as indicated.

B. Related Sections

1. Section 04200 - Unit Masonry.
2. Section 05120 - Structural Steel.
3. Section 05550 - Sheet Metal Fabrications.
4. Section 06400 - Architectural Woodwork.
5. Section 09900 - Painting.
7. Section 10651 - Operable Panel Partitions.
8. Divisions 15, 16 and 17 - Mechanical, Electrical and Telecommunication Work.

1.2 SUBMITTALS

A. Product Data: Submit product data for products used in miscellaneous metal fabrications, including paint products and grout.

B. Shop Drawings: Submit shop drawings for fabrication and erection of metal fabrications. Include plans, elevations and details of sections and connections. Show anchorage and accessory items. Provide templates for anchors and bolts installed by others.

1. Metal fabrications indicated to meet structural performances shall be prepared, and sealed by a professional engineer licensed in New York State.

C. Samples: Submit samples representative of materials and finished products as may be requested by Architect.

D. Certifications: Submit welding certificates certifying that welders comply with requirements of "Quality Assurance" article.

1.3 QUALITY ASSURANCE

A. Fabricator: Firm experienced in successfully producing metal fabrications similar to those required for this Project.

B. Installer: Arrange for installation of metal fabrications by same firm that fabricated them.

C. Engineer: Firm experienced in successfully designing metal fabrications similar to those required for this Project. Engineer shall be licensed in the State of New York.

D. Welding: Qualify welding processes and operators in accordance with AWS D1.1 "Structural Welding Code - Steel," D1.3 "Structural Welding Code - Sheet Steel".

1.5 PROJECT CONDITIONS

A. Field Measurements: Check actual locations of construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings.

PART 2 - PRODUCTS

2.1 FERROUS METALS

A. Metal Surfaces, General: For exposed metal fabrications, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes.

1. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher leveled sheet.

B. Steel Plates, Shapes, and Bars: ASTM A 36.

C. Steel Tubing: Cold-formed, Grade A, ASTM A 500; or hot-rolled, ASTM A 501.

D. Structural Steel Sheet: Cold-rolled ASTM A 611; or hot-rolled, ASTM A 570, grade as required by design loading.

E. Steel Pipe: ASTM A 53; of type, grade and schedule, as required for design loading, black finish, unless indicated to be galvanized.

F. Slotted Channel Framing: Cold-formed metal channels with flange edges returned toward web and with 9/16-inch- wide slotted holes in webs at 2 inches o.c.

1. Width of Channels: 1-5/8 inches.

2. Depth of Channels: As indicated.

3. Metal and Thickness: Galvanized steel complying with ASTM A 653, structural quality, Grade 33, with G90 coating; 0.108-inch nominal thickness, unless otherwise indicated on the approved Shop Drawings.

4. Finish: Rust-inhibitive, baked-on, acrylic enamel.

G. Gray Iron Castings: ASTM A 48, Class 30.

H. Malleable Iron Castings: ASTM A 47, grade 32510.

I. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

J. Concrete Inserts: Threaded or wedge type; galvanized malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.

K. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.

2.2 GROUT AND ANCHORING CEMENT

A. Nonshrink Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with CE CRD- C 621, and recommended by manufacturer for interior and exterior use.

B. Grout Products: Subject to compliance with requirements, provide one of the following:

1. "Euco N-S Grout"; Euclid Chemical Co.
2. "Masterflow 713"; Master Builders.
3. "Stoncrete NM1"; Stonhard, Inc.

2.3 FASTENERS

A. General: Provide zinc-coated fasteners where exposed to moisture. Select fasteners for the type, grade, and class required.

B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.

C. Lag Bolts: Square head type, FS FF-B-561.

D. Machine Screws: Cadmium plated steel, FS FF-S-92.

E. Plain Washers: Round, carbon steel, FS FF-W-92.

F. Expansion Anchors: FS FF-S-325, Group VIII, Type I; and machine bolts complying with FS FF-B-575, Grade 5.

G. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class, and style as required.

H. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

2.4 ROUGH HARDWARE

A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.

B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.5 PAINT

A. Shop Primer for Ferrous Metal: Fabricator's standard, fast-curing, lead-free, alkyd primer selected for compatibility with finish paint; complying with performance requirements of FS TT-P-645.

B. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12 except containing no asbestos fibers.

2.6 FABRICATION, GENERAL

A. Form metal fabrications of size, thickness, and shapes indicated but not less than needed to comply with performance requirements. Work to dimensions on shop drawings, using proven details of fabrication and support. Use type of materials indicated.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges slightly.

1. Remove sharp edges on exposed surfaces.

C. Allow for thermal movement resulting from 100 deg. F change (range) in air temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners.

D. Shear and punch metals cleanly and accurately. Remove burrs. Remove sharp or rough areas on exposed traffic surfaces.

E. Ease exposed edges to a radius of approximately 1/32 inch. Form bent-metal corners to smallest radius possible without impairing work.

F. Weld corners and seams continuously to comply with AWS recommendations and the following:

1. Minimize distortion and develop strength of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish exposed welds smooth and flush with adjacent surfaces.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use Phillips flat-head fasteners where exposed. Locate joints where least conspicuous.

H. Provide for anchorage of type indicated. Fabricate and space anchoring devices to provide adequate support for intended use.

I. Preassemble items in shop where possible. Disassemble units only as necessary for shipping and handling. Use connections that maintain structural value of joined pieces.

J. Cut, reinforce, drill and tap miscellaneous metal work as required to receive finish hardware, screws, and similar items.

K. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.7 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

2.8 LOOSE STEEL LINTELS

A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls.

B. Weld adjoining members to form a single unit.

C. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing at each side of openings.

2.9 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports which are not a part of structural steel framework, including but not limited to countertop and partition supports, and as required to complete work.

B. Fabricate units to sizes, shapes, and profiles required to support other construction. Fabricate from structural steel of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive other work.

1. Equip units with integrally welded anchors for embedment. Furnish inserts if units must be installed after concrete is placed.

2. Except as otherwise indicated, space anchors 24 inches o.c. Provide anchors 1-1/4 inches wide x 1/4 inch x 8 inches long.

2.10 FINISHES, GENERAL

A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.

B. Finish metal fabrications after assembly.

2.11 STEEL AND IRON FINISHES

A. Galvanizing: For galvanized items, apply zinc-coating by the hot-dip process in compliance with the following requirements:

1. ASTM A 153 for galvanizing iron and steel hardware.

2. ASTM A 123 for galvanizing iron and steel shapes, plates, bars, and strip 0.0299 inch thick and heavier.

B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below:

1. Interiors (SSPC Zone 1A): "Power Tool Cleaning."

5. Exteriors (SSPC Zone 1B): "Commercial Blast Cleaning"

C. Apply shop primer to uncoated metal, except surfaces with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry. Comply with SSPC-PA1 "Paint Application Specification No. 1" for shop painting.

1. Paint colors and gloss to match Architect's sample.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams and directions for installation of anchorages that are to be embedded in concrete or masonry. Coordinate delivery of such items.

B. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

3.2 INSTALLATION, GENERAL

A. Anchors: Provide anchors and fasteners where necessary for securing metal fabrications to in-place construction.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

D. Fit exposed connections accurately to form hairline joints. Weld connections that cannot be shop welded. Do not weld, cut, or abrade units which have been hot-dip galvanized after fabrication.

E. Field Welding: Comply with AWS Code for welding, appearance and quality of welds made, methods used in correcting welding work, and as required for shop welding.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with dissimilar materials with a heavy coat of bituminous paint or zinc chromate primer.

G. Manufactured Items: Install manufactured products to comply with manufacturer's instructions unless otherwise shown.

3.3 SETTING LOOSE PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.

B. Set loose leveling and bearing plates on wedges or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.

C. Use nonshrink, metallic grout in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.

1. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 SETTING LOOSE STEEL LINTELS

H. Refer to "Section 04200 - Unit Masonry."

3.5 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings, if any.

3.6 ADJUSTING AND CLEANING

A. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Comply with SSPC-PA 1 to provide a minimum dry film thickness of 2.0 mils.

END OF SECTION

SECTION 05550 - SHEET METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide sheet metal fabrications in accordance with the Contract Documents. The work of this Section shall include but not be limited to the following:

1. Replacement aluminum louver/grille for existing convector enclosures.

2. Custom perforated steel monitor and Audio-visual enclosures, as indicated.

3. Custom perforated steel "Podium Wall" cladding / paneling, as indicated.

B. Related Sections

1. Section 04200 - Unit Masonry.
2. Section 05100 - Structural Steel.
3. Section 05500 - Metal Fabrications.
4. Section 06100 - Rough Carpentry.
5. Section 06400 - Architectural Woodwork.
6. Section 07900 - Joint Sealers.
7. Section 09250 - Gypsum Board Assemblies.
8. Section 09900 - Painting.
9. Division 16 - Electrical Work.
10. Division 17 - Telecommunications Work.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's data for each product used in ornamental metalwork, including finishing materials and methods.

B. Shop Drawings: Submit drawings showing fabrication and installation of sheet metal fabrication work including plans, elevations and details of components and attachments to other Work. Indicate materials, profiles and fitting, joinery, finishes, fasteners, anchorages and accessory items.

1. Include setting drawings, templates, and directions for installation of anchorages to be installed by others.

2. Indicated alignments, integration, jointery and other interface elements between Work of this Section and other Sections to receive materials or fabrications of the Work of this Section for coordination.

3. Where materials or fabrications are indicated to comply with design loadings, include structural computations, material properties and other information needed for structural analysis.

4. Structural data shall be signed and sealed by the qualified professional engineer who was responsible for their preparation.

5. Indicate dimensions which require field verification.

D. Samples: Submit samples of each type of metal finish required, prepared on metal of same thickness and alloy indicated for final unit of Work. Where finishes involves normal color and texture variations, include sample sets composed of two or more units showing full range of variations expected.

1. Include 6 inch long samples of each type linear shapes.

2. Include 6 inch square samples of each type perforated and non-perforated steel plate/sheet.

3. Samples of typical and atypical corners and intersections, and exposed welded connections (ground smooth) and compound or layered assemblies.

4. Include a full size replacement louver/grille sample.

E. Certifications: Submit installer certificates signed by Contractor certifying that welders comply with requirements specified under "Quality Assurance" article.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm experienced in successfully producing sheet metal fabrication work similar to that indicated for this Project and with sufficient production capacity to produce required units without delaying the Work.

B. Installer Qualifications: Arrange for installation of metalwork specified in this Section by the same firm that fabricated it.

C. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel" and AWS D1.2 "Structural Welding Code--Aluminum."

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

D. Engineer Qualifications: Professional engineer licensed to practice in the State of New York and experienced in structural engineering of metal fabrications similar to those indicated for this Project.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store sheet metal fabrication work inside a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.

B. Deliver and store metal fabrications and assemblies in wooden crates with sufficient protections to ensure that they will be free of damages.

1.5 PROJECT CONDITIONS

A. Field Measurements: Where sheet metal fabrication work is indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 METALS

A. General: Provide metals free from surface blemishes where exposed to view in the finished unit. Exposed-to-view surfaces exhibiting pitting, seam marks, roller marks, stains, discolorations, or other imperfections on finished units are not acceptable.

B. Steel and Iron: Provide steel and iron in the form indicated complying with the following requirements:

1. Tubing: Cold-formed, ASTM A 500.
2. Steel Plate, Shapes, and Bars: ASTM A 36/A 36M.
3. Gray Iron Castings: ASTM A 48, Class 30.
4. Malleable Iron Castings: ASTM A 47 (ASTM A 47M), grade as recommended by fabricator for type of use indicated.
5. Perforated Steel Sheet: Steel sheet, of gage or thickness indicated, with diameter holes, pattern and percent of open area as indicated or selected by Architect.
6. Structural Steel Sheet: Hot-rolled, ASTM A 570; or cold-rolled ASTM A 611, Class 1; of grade required for design loading.

D. Aluminum: Provide alloy and temper recommended by aluminum producer or finisher for type of use and finish indicated, and with not less than the strength and durability properties of the alloy and temper designated below for each aluminum form required.

1. Extruded Bar and Shapes: ASTM B 221, 6063-T6.
2. Plate and Sheet: ASTM B 209, 6061-T6.

2.2 MISCELLANEOUS MATERIALS

A. Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of metal to be welded, complying with applicable AWS specifications, and as required for color match, strength and compatibility.

B. Fasteners: Of same basic metal and alloy as fastened metal, unless otherwise indicated. Do not use metals which are corrosive or otherwise incompatible with metals joined.

1. Provide decorative exposed fasteners, of material, head design and installation pattern as selected by the Architect; for interconnection of sheet metal fabrication work components and for their attachment to other work, unless otherwise indicated.

C. Nonshrink Nonmetallic Grout: Pre-mixed, factory-packaged, nonstaining, noncorrosive grout complying with CE CRD C621.

D. Anchors and Inserts: Provide anchors of type, size, and material required for conditions shown. Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior locations and elsewhere as required for corrosion resistance.

E. Bituminous Paint: SSPC-Paint 12 (cold-applied asphalt mastic).

2.3 FABRICATION, GENERAL

A. Form sheet metal work to required shapes and sizes, with true curves, lines and angles. Provide components in sizes and profiles indicated, and as required for structural performance.

B. Allow for thermal movement due to 100 deg. F range in ambient temperature, in the installed metal assemblies, to prevent buckling, opening up of joints and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals.

C. Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners wherever possible.

D. Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded joints of all welding flux, and dress on all exposed and contact surfaces.

E. Mill joints to a tight, hairline fit. Cope or miter corner joints. Form joints exposed to weather to exclude water.

F. Provide castings that are sound and free of warp or defects which impair strength and appearance.

G. Finish exposed surfaces to smooth, sharp, well-defined lines and arises.

H. Preassemble items in shop to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling.

I. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

J. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges slightly.

1. Remove sharp edges on exposed surfaces.

K. Shear and punch metals cleanly and accurately. Remove burrs. Remove sharp or rough areas on exposed traffic surfaces.

L. Ease exposed edges to a radius of approximately 1/32 inch. Form bent-metal corners to smallest radius possible without impairing work.

M. Weld corners and seams continuously to comply with AWS recommendations and the following:

1. Minimize distortion and develop strength of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish exposed welds smooth, flush with adjacent surfaces with no visible inclusions or pits.

N. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners where indicated of driver type as indicated or selected by Architect. Locate joints where least conspicuous.

O. Provide for anchorage of type indicated. Fabricate and space anchoring devices to provide adequate support for intended use.

P. Preassemble items in shop where possible. Disassemble units only as necessary for shipping and handling. Use connections that maintain structural value of joined pieces.

Q. Cut, reinforce, drill and tap miscellaneous metal work as required to receive finish hardware, screws, and similar items.

2.4 ORNAMENTAL SHEET METAL ASSEMBLIES

A. General: Fabricate ornamental sheet metal assemblies, including but not limited to "Podium Wall" and audio-visual enclosure units to comply with requirements indicated for design, dimensions, materials, joinery, and performance.

B. Coordinate dimensions and attachment methods of ornamental sheet metal fabrications with those of adjoining products and construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned with one another in the relationship indicated.

C. Increase metal thickness or reinforce metal with concealed stiffeners, backing materials, or both, as required to produce surfaces whose variations in flatness do not exceed those permitted by referenced standards for stretcher-leveled metal sheet and to impart sufficient strength for indicated use.

1. Support joints with concealed stiffeners as required to hold exposed faces of adjoining sheets in flush alignment.

2. Fill space between stiffeners with sound-deadening insulation attached to face sheet with cold-applied asphalt mastic, unless otherwise indicated.

D. Assemble ornamental sheet metal fabrications in the shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

E. Form ornamental sheet metal fabrications to profiles indicated in maximum lengths to minimize joints and without exposed cut edges. Fold back exposed ends of unsupported sheet metal to form a 1/2 inch wide hem on the concealed side, or ease exposed edges with backing to a radius of approximately 1/32 inch. Produce flat, flush surfaces without cracking or grain separation at bends.

F. Continuously weld joints and seams, except where other methods of joining are indicated. Grind, fill, and dress welds to produce smooth flush exposed surfaces in which welds are not visible after final finishing is completed.

G. Build in straps, plates, and brackets as required for supporting and anchoring fabricated items to adjoining construction. Reinforce ornamental sheet metal units as required to attach and support other construction.

2.5 FINISHES, GENERAL

A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.

B. Protect mechanical finishes on exposed surfaces from damage with temporary protective covering prior to shipment.

2.6 IRON AND STEEL FINISHES

A. General: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

B. Volatile Organic Materials: Provide paint and coating products to comply with applicable environmental regulations and local authorities.

C. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface-preparation specifications and environmental exposure conditions of installed ornamental metalwork:

1. Exposed, Clear Prime/Finish Cold Rolled Steel (SSPC Zone 1B): SSPC-SP 6 "Commercial Blast Cleaning."

D. Factory-Applied Finish: Apply shop applied, air-cured, acrylic emulsion - metallic paint finish system (including primer), immediately following cleaning and pretreatment, to provide a minimum dry film thickness as recommended by the paint manufacturer. Apply to surfaces after shop fabrication and pre-assembly.

1. Touch-up metallic paint finishes after erectrion and installation.

2. Product: "Ferroxtone" as manufactured by Bollen International. Provide not less than two coats of finish over recommended primer.

3. Color: "FX-99 / Blue Steel", unless otherwise indicated.

2.7 ALUMINUM FINISHES

A. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

B. Class II Clear Anodized Finish: AA-M12C22A31 (Mechanical Finish: as fabricated, nonspecular; Chemical Finish: etched, medium matte; Anodic Coating: Class II Architectural, clear film thicker than 0.4 mil), unless otherwise indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages and setting drawings, diagrams, templates, instructions, and directions for installing items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the Project site.

3.2 INSTALLATION, GENERAL

A. Provide anchorage devices and fasteners for securing ornamental metal items; including, threaded fasteners for concrete and masonry inserts, through-bolts, wood screws and other connectors.

B. Perform cutting, drilling and fitting required for installation of ornamental metalwork. Set products accurately in location, alignment and elevation, plumb, level and true, measured from established lines and levels. Provide temporary bracing or anchors for items to be built into concrete or masonry.

C. Fit exposed connections accurately to form tight, hairline joints or, where indicated, with uniform reveals and spaces for sealants. Where cutting, welding and grinding are required for proper fitting of ornamental metal items, restore finishes to eliminate any evidence of such corrective work.

D. Do not cut or abrade finishes which cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing or provide new units as required.

E. Restore protective coverings which have been damaged. Remove protective coverings only when there is no possibility of damage from other work yet to be performed.

1. Remove protective coverings simultaneously from similarly finished items to avoid discoloration.

F. Field Welding: Comply with applicable AS procedures for welding, for appearance and quality of welds made, and for methods used in correcting welding work. Weld connections which are not to be left as exposed joints, but cannot be shop welded. Grind exposed welded joints smooth and restore finish to match adjacent surfaces.

G. Exposed Fasteners: Install exposed fasteners of sizes, materials, finish, and with heads matching Architect's samples.

1. Locate and space exposed fasteners in true vertical and horizontal and vertical alignment, as indicated on the approved shop drawings. Use proper tools to obtain controlled uniform torque for a rattle-free, rigid assembly.

H. Corrosion Protection: Coat metal surfaces which will be in contact with grout, concrete, masonry, treated wood, or dissimilar metals, with bituminous paint or zinc chromate primer.

I. Provide perforated metal wall treatment as indicated with vibration resistant fastening; assemblies shall be rattle free.

1. Avoid metal-to-metal contact; install concealed non-metallic shims, washers and similar separators acceptable to the Architect.

3.3 ADJUSTING

A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.

3.4 PROTECTION

A. Protect finishes of metalwork with temporary protective coverings approved by ornamental metalwork fabricator. Remove protective covering at time of Substantial Completion.

B. Restore damaged finishes so that no evidence remains of correction work. Return items which cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units as required.

END OF SECTION

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide rough carpentry in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Miscellaneous rough framing with dimensional lumber, as indicated.

2. Wood grounds, nailers, blocking and furring and other miscellaneous carpentry work which is generally not exposed.

3. Plywood construction panels, as indicated.

B. Related Sections

1. Section 01500 - Construction Facilities and Temporary Controls.
2. Section 06400 - Architectural Woodwork.
3. Section 07510 - Membrane Roofing and Repairs.
4. Section 07600 - Flashing and Sheet Metal.
5. Section 09250 - Gypsum Board Assemblies.
6. Section 09900 - Painting.
7. Division 16 - Electrical Work.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for manufactured materials, including construction panels.

B. Material Certificates: Submit listing of species and grade selected for framing lumber, and a signed copy of grading rules showing design values for selected lumber. Design values shall comply with specified requirements and American Lumber Standards Committee.

C. Wood Treatment Data: Submit chemical treatment manufacturer's instructions for handling, storing, and using treated material.

1. Submit certification by treating plant stating type of treatment, preservative retained and conformance with applicable standards.

2. Submit a statement that moisture content of treated materials complied with levels indicated before delivery.

3. Submit certification by treating plant that fire-retardant-treated wood products comply with specified standards and other requirements.

1.3 PRODUCT HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Stack wood to provide air circulation within and around stacks.

1.4 PROJECT CONDITIONS

A. Coordination: Fit carpentry work to other work accurately. Correlate location of supports for attachment of other work.

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

A. Lumber Standards: Comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee.

B. Grade Stamps: Furnish lumber with grade stamp of inspection agency to show compliance with grading rules, and identifying grading agency, grade, species, moisture content and mill.

C. Provide lumber sizes as required by PS 20, unless otherwise shown.

1. Provide dressed lumber, S4S.

2. Provide seasoned lumber with 15% maximum moisture content.

2.2 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

1. Grade: No. 2, or better.
2. Species: Douglas fir; NLGA.
3. Modulus of Elasticity (E): 1,600,000 psi.
4. Fiber Bending Stress (Fb): 875 psi.

2.3 WOOD-BASED STRUCTURAL-USE PANELS, GENERAL

A. Structural-Use Panel Standards: Provide either all-veneer, mat-formed, or composite panels complying with DOC PS 2, "Performance Standard for Wood-Based Structural-Use Panels," unless otherwise indicated. Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood," where plywood is indicated.

1. Structural-Use Panel Standard: Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood."

2. Trademark: Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements.

2.4 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

A. General: Where structural-use panels are indicated for the following concealed types of applications, provide APA-performance-rated panels complying with requirements designated under each application for grade, span rating, exposure durability classification, and edge detail (where applicable).

1. Thickness: Provide panels meeting requirements specified but not less than thickness indicated.

2. Span Ratings: Provide panels with span ratings required to meet "Code Plus" provisions of APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial."

B. Roof Sheathing: APA-rated sheathing.

1. Exposure Durability Classification: Exposure 1.
2. Span Rating: As required to suit stud spacing indicated.
3. Minimum Thickness: 3/4 inch, unless otherwise indicated.

2.5 STRUCTURAL-USE PANELS FOR BACKING

A. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels with grade, C-D Plugged Exposure 1, in thickness indicated or, if not otherwise indicated, not less than 3/4 inch thick.

2.6 METAL FRAMING ANCHORS

A. General: Provide galvanized steel framing anchors of structural capacity, type, and size indicated and as follows:

1 Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with building code in effect for Project.

2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.

B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.

2.7 MISCELLANEOUS MATERIALS

A. Fasteners and Anchorages: Provide size, type, material and finish complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers, anchors and connectors of the size and type recommended by the manufacturer for each use indicated including recommended nails.

1. Provide galvanized steel connectors, minimum 16 gage, of type and size as recommended by manufacturer for uses indicated.

B. Building Paper: ASTM D 226, Type I; asphalt saturated felt, non-perforated, 15-lb. type.

C. Construction Adhesives: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.

2.8 WOOD TREATMENT BY PRESSURE PROCESS

A. Preservative Treatment: Comply with applicable requirements of AWPA Standards C2 (Lumber) and C9 (Plywood) and of AWPB Standards listed below. Mark each treated item with the AWPB Quality Mark.

1. Pressure-treat above-ground items with water-borne preservatives to comply with AWPB LB-2. After treatment, kiln-dry lumber and plywood to 15% maximum moisture content. Treat the following:

a. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.

2. Complete fabrication of treated items prior to treatment, where possible. Coat field cut surfaces with heavy brush coat of same chemical used for treatment and to comply with AWPA M4.

B. Fire-Retardant Treatment: Comply with City of New York Code. Pressure impregnate interior lumber and plywood with fire-retardant chemicals to comply with AWPA C20 and C27, respectively. Identify treated lumber with marking of Underwriters Laboratories, Inc., U.S. Testing, or other approved testing and inspecting agency.

1. Current Evaluation/Research Reports: Provide fire-retardant- treated wood for which a current model code evaluation/research report exists that is acceptable to authorities having jurisdiction and that evidences compliance of fire-retardant- treated wood for application indicated.

2. Interior Type A: For interior locations use fire-retardant chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation:

   a. No reduction takes place in bending strength, stiffness, and fastener holding capacities below values published by manufacturer of chemical formulation that are based on tests by a qualified independent testing laboratory of treated wood products identical to those indicated for this Project under elevated temperature and humidity conditions simulating installed conditions.

   b. No other form of degradation occurs due to acid hydrolysis or other causes related to manufacture and treatment.

   c. No corrosion of metal fasteners results from their contact with treated wood.

3. Products: Subject to compliance with requirements, provide one of the following:

   a. "Dricon," Hickson Corporation.
   b. "Pyro-Guard," Hoover Treated Wood Products.
   c. "Flameproof LHC-HTT," Osmose Wood Preserving Co, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard defective materials. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.

B. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.
2. Published requirements of metal framing anchor manufacturer.
3. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction."
4. "Table 23-I-Q--Nailing Schedule" of the Uniform Building Code.
5. "Table 2305.2--Fastening Schedule" of the BOCA National Building Code.
6. "Table 1705.1--Fastening Schedule," of the Standard Building Code.

C. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

D. Use fasteners of size to not penetrate members to exposed side or into finish materials. Make tight connections; install fasteners without splitting of wood; predrill as required.

3.2 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS

A. Provide where shown for screeding or attachment of other work. Shape as shown and locate for true line and level of work to be attached.

B. Attach to support applied loading. Countersink exposed bolts and nuts flush with surfaces. Where possible, anchor to concrete and masonry during their installation.

C. Provide permanent grounds of dressed, preservative treated, key-bevelled lumber not less than 1-1/2" wide and of thickness to match finish material. Remove temporary grounds when no longer required.

3.3 WOOD FURRING

A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

B. Provide furring of sizes and spacing as shown on the Drawings.

3.4 INSTALLATION OF STRUCTURAL-USE PANELS

A. General: Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.

B. Comply with "Code Plus" provisions of above-referenced guide.

1. Fastening Methods: Fasten panels as indicated below:

a. Roof Sheathing: Glue and nail to framing. Space panels 1/8 inch at edges and ends.

b. Plywood Backing Panels: Nail or screw to supports.

END OF SECTION

SECTION 06400 - ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: The Work of this Section generally includes, but is not necessarily limited to, the following:

1. Plastic laminate clad cabinets and casework.

2. Wood clad cabinets, desks, credenzas, and casework.

3. Plastic laminate clad counter tops, work surfaces, and shelving.

4. Solid polymer acrylic countertop assemblies.

5. Custom "Faux Wood" paneling systems, as indicated.

6. Solid wood standing and running trim and rails.

7. Wood door frames.

8. Storage, closet and open shelving assemblies.

9. Cabinet, shelving and other hardware and accessories.

10. Factory finishing of architectural woodwork.

11. Architectural woodwork accessories including, but not limited to, computer tub assemblies, grommets and covers, wire management clips and other miscellaneous devices.

B. Related Sections

1. Section 05500 - Metal Fabrications.
2. Section 06100 - Rough Carpentry.
3. Section 07900 - Joint Sealers.
4. Section 08210 - Wood Doors.
5. Section 09250 - Gypsum Board Assemblies.
6. Section 09900 - Painting.
7. Divisions 15 and 16 - Mechanical and Electrical Work.

1.2 QUALITY ASSURANCE

A. Manufacturer/Fabricator: The work of this Section shall be provided by a firm having a minimum of 10 years experience on projects of similar size and quality to that shown and specified.

B. Single-Source Manufacturing and Installation Responsibility: Engage a qualified Manufacturer to assume undivided responsibility for woodwork specified in this section, including fabrication, finishing, and installation.

C. Wood Veneer: Wood veneer shall be selected from a source that will guarantee the grain variation that is selected by the Architect as control sample range.

D. Requirements of Regulatory Agencies:

1. Fire Retardant Treatment for Wood: Fire-retardant treat those items required by applicable codes to be treated and those items shown or specified as "Fire Retardant Treated Wood" or similar designation.

E. Fire-Retardant Marking: Mark each unit of fire-retardant treated wood and plywood with producer's label and a label showing grade and rating. Mark on surface which will not be exposed after installation.

F. Coordination: Furnish all grommets, plates, cutouts, raceways, and devices which must be incorporated into the work for installation of architectural woodwork. Coordinate delivery with other work to avoid delay. Coordinate with Division 16 - Electrical Work.

G. Mock-Up: Prior to installation of Architectural Woodwork, install sample mock-up to include one complete "Faux Wood" wall panel assembly, using materials and systems required for final work. Install mock-up in location at site as directed by Architect.

1.3 REFERENCES

A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI), except as otherwise modified by the Contract Documents or governing codes.

B. ASTM E 84, UL 723, Standard Test Method for Surface Burning Characteristics of Materials.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each item of factory-fabricated woodwork.

1. Fire-Retardant Materials: Include manufacturer's instructions for handling, storing and installation of fire-retardant treated materials.

a. Certification: Include certification that fire-retardant treated materials comply with requirements indicated.

2. Quality Certification: Submit manufacturer's (fabricator's) certification, stating that the fabricated work complies with quality grades and other requirements indicated.

B. Shop Drawings: Submit shop drawings of each item of architectural woodwork, showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components.

C. Samples

1. Submit the following samples for each species and cut or pattern of architectural woodwork:

a. Solid wood with factory finish; set of 3 pieces, 6" x 3/4" x 18", for each color and finish, finished on one side and one edge, and finish as specified.

b. Veneer faced plywood with factory finish, 3 finished samples, 16" square, for each finish, veneer cut and color. Veneer samples shall show the full range of veneer variation permitted in the work.

c. "Faux wood" panel with factory applied finishes; set of 3 pieces (of each finish), 6" x 3/4" x 18", for each color and finish, finished on one side and one edge, and finish as specified.

d. Exposed casework hardware and accessories, one unit of each type and finish.

e. Plastic laminate, 12" square, each type, finish and color.

f. Solid polymer plastic sheeting, 12" square, each type, finish and color.

D. Test Reports: Submit certified test reports showing compliance with the fire resistance requirements. Include certified test reports regarding the material performance of each different type of ballistic resistant product proposed.

E. Certification of Fire Retardant Treatment of Wood: Submit certification, stating name of fire retardant materials used, and compliance with AWPA Specification C1 and C20 for lumber and C27 for plywood. Certify that fire retardant materials will not bleed through painted or natural finish surfaces.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver woodwork until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.6 PROJECT CONDITIONS

A. Conditioning: Installer shall advise Contractor of temperature and humidity requirements for woodwork installation areas. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

PART 2 - PRODUCTS

2.1 BASIC MATERIALS AND FABRICATION METHODS

A. General: Except as otherwise indicated, comply with following requirements for architectural woodwork not specifically indicated as prefabricated or prefinished standard products.

B. Wood Moisture Content: Provide kiln-dried (KD) lumber with an average moisture content range of 6% to 11% for interior work. Maintain temperature and relative humidity during fabrication, storage and finishing operations so that moisture content values for woodwork at time of installation does not exceed 5% to 10%.

C. Fire Retardant Treatment

1. Where fire-retardant treated lumber and veneer core plywood is required, provide materials which comply with applicable AWPA standards for pressure impregnation with fire-retardant chemicals and with the following requirements.

a. Flame spread, fuel contributed and smoke developed ratings of 25 or less, with no increase in flame spread and no evidence of significant progressive combustion upon continuation of test for additional 20 minutes.

b. Use cured organic resin solution for fire-retardant treatment which is relatively insoluble in water, is suitable for interior applications, will not bleed through or otherwise adversely affect types of finishes indicated, and permits milling of lumber after treatment and kiln drying by a treatment or woodworking plant certified by UL.

c. Kiln-dry treated woodwork to a maximum moisture content of 10% after treatment unless otherwise indicated.

d. Inspect each piece of lumber and plywood; do not use twisted, warped, bowed or otherwise damaged or defective wood.

2. Where fire-retardant particleboard is required, provide panels with fire-retardant chemicals incorporated at time of manufacture to achieve surface-burning characteristics of 25 for flame spread, 10 for fuel contributed and 25 for smoke developed when tested in accordance with ASTM E 84. Comply with ANSI A 108.1 for Grade 1-M-1 panels with density of 48 lbs./cu. ft. for thicknesses of 3/4" and less, 44 lbs./cu. ft. for thicknesses of 13/16" to 1-1/4"; except as follows:

a. Modulus of rupture and modulus of elasticity: 1600 psi and 350,000 psi for 48 lb. density, 1300 psi and 275,000 psi for 44 lb. density.

b. Linear expansion of 0.50% for 44 lb. density.

c. Screw-holding capacity, face and edge, of 300 lbs. and 250 lbs. for 48 lb. density, and of 250 and 175 lbs., respectively, for 44 lb. density.

D. Panel Products: AWI Section 200, veneer core or particle core plywood, matching Architect's sample, with face veneers as scheduled.

1. Transparent Finish: Grade I per AWI Section 200-S-8, of figured Makore matching Architect's sample.

2. Opaque Finish: Any specie of hardwood veneer of Grade II per AWI Section 200-S-8 which, when finished, will not show any grain, imperfection or other surface defects when used with the opaque finish specified.

   a. Medium density fiberboard may be substituted for the opaque finished woodwork assemblies when acceptable to the Architect.

E. Plastic Laminate: NEMA Standard LD3, matte finish unless noted otherwise, 0.05 in. thick for all exposed surfaces; "Color Core" or equal for edge banding; backing grade and cabinet liner grade where appropriate. Plastic laminate by manufacturer and in colors and textures as selected by the Architect.

   1. Provide post-form grade plastic laminate in locations indicated; matching the Architect's samples

F. Steel: Structural steel shapes and plates complying with ASTM A36.

G. Miscellaneous Products

   1. Fasteners

      a. Wood Screws: FS FF-S-111, type, size, material and finish as required for the condition of use.

      b. Nails: FS FF-N-105, type, size, material and finish as required for the condition of use.

      c. Anchors: Type, size, material and finish as required for the condition of use.

   2. Adhesives

      a. For Laminating Plastic Laminate Surfaces: Melamine, phenol-resin, or resorcinal-resin complying with FS MMM-A-181; type, grade and class best suited for the purpose.

      b. For All Other Uses: Moisture resistant complying with FS MMM-A-125, Type II, or MMM-A-188, Type I, II or III; type best suited for the purpose.

H. "Faux Wood" Panel Product: Manufacturer's proprietary pre-finished "faux wood" panels with integral reveals via a tongue and groove edge system; 24 inch by 24 inch by 1/2 inch thick, panel finishes shall match the Architect's samples.

1. "Faux Wood Panel (W-1) Finish: Tahoe Anigre, matching the Architect's sample.

2. "Faux Wood Panel (W-2) Finish: Tropical Mahogany, matching the Architect's sample.

2.3 FABRICATION - GENERAL

A. Provide steel framing and lumber framing for architectural woodwork, complete with all bracing and fastening devices as required for a rigid installation, and as required to sustain the imposed loads.

B. Do all fabrication from field measurement with provision for scribing as required to meet built-in conditions.

C. Coordinate the work of this Section with the work of other trades.

D. Fabricate units in largest practicable sections. Assemble in the shop for trial fit, disassemble for shipment and reassemble with concealed fasteners.

E. Maintain relative humidity and temperature during fabrication, storage and finishing operations matching that of the areas of installation.

F. Details indicate the required type and quality of construction. Modifications to conform to manufacturer's standards will be considered providing they comply with the Contract Documents, maintain the profiles shown and subject to acceptance by the Architect.

G. Reinforcing shown is minimum. Provide additional reinforcing as required to ensure a rigid assembly. Exposed surfaces shall be free from dents, tool marks, warpage, buckle, glue and open joints, or other defects affecting serviceability or appearance. Accurately fit all joints, corners and miters. Conceal all fasteners. Make threaded connections up tight so that threads are entirely concealed.

H. Welding and brazing shall be of adequate strength and durability with joints tight and flush, smooth and clean. All exposed surfaces shall be ground and finished flush, free of weld marks. Welds or brazes on finished surfaces shall be indistinguishable from parent metal. All welds and brazing shall be approved by the Architect.

I. Pre-Cut Openings: Fabricate architectural woodwork with pre-cut openings, where possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in countertops and similar exposures, seal edges of cutouts with a water-resistant coating.

2.4 ARCHITECTURAL CASEWORK TOPS AND BACKSPLASHES

A. Quality Standard: Comply with AWI Section 400, Division 400C.

B. High Pressure Decorative Laminate-Type Tops.

1. Grade: Custom.

2. Laminate Cladding for Horizontal Surface: High pressure decorative laminate complying with NEMA LD 3 and as follows:

a. Colors, Patterns and Finishes: Refer to Finish Schedule.

b. Grade: PF-42 (0.042" nominal thickness).

3. Edge Treatment: Same as laminate cladding on horizontal surfaces, unless otherwise indicated.

C. Solid Polymer Acrylic Type Tops: Provide solid polymer acrylic countertops assemblies and similar surfacing of type, size, finish and texture indicated on the drawings and schedules.

1. Provide solid, homogeneous, non-porous, mineral filled acrylic surfacing material containing methyl methacrylate, "CORIAN" as manufactured by DuPont Co., or approved equal.

a. Sizes and Profiles: As indicated on the drawings.

b. Edge Treatment: 1-1/2 inch bullnose, unless otherwise indicated.

c. Color and Texture: "Sierra Series/Aurora, unless otherwise indicated.

2.5 ARCHITECTURAL CABINETS AND WOODWORK, LAMINATE CLAD

A. Quality Standard: AWI Section 400, Division B.

B. Laminate Clad Cabinets: Comply with the following requirements:

1. Grade: Premium.

2. Construction: Flush overlay, unless otherwise shown.

3. Cabinet, Door and Drawer Exteriors: NEMA LD 3 high pressure laminate as follows:

a. Colors, Patterns and Finishes: To match Architect's samples.

b. Horizontal Surfaces: GP-50 (0.050" nominal thickness).

c. Post Formed Surfaces: PF-42 (0.042" nominal thickness).

d. Semi-Exposed Surfaces: GP-28 (0.028" nominal thickness).

4. Cabinet and Drawer Interiors: Provide cabinet body interiors, interior shelving, interior drawers fabricated from clear birch veneers over plywood cores; provide matching edge banding. Finish interior birch surfaces with the manufacturer's standard clear lacquer.

5. Fabricate exposed edges of casework, including edges of doors and drawers, with matching plastic laminate.

2.6 ARCHITECTURAL CABINETS AND WOODWORK, WOOD VENEER CLAD

A. Fabricate architectural cabinets, reception desk, audio/visual cabinets, credenza and other custom wood veneered assemblies to design, detail and dimension indicated; and in accordance with AWI Section 400, Premium Grade, with transparent finish where scheduled.

1. Provide flush overlay type cabinets with 1/4" thick plywood dust panels above compartments and drawers, except where located directly under countertops, unless otherwise indicated.

2. Woodwork Exterior, Wood Specie and Cut: Figured Makore; flitch #8901 as provided by U.S. Veneer, unless otherwise selected by the Architect.

3. Woodwork Interior, Finish/Veneer: Provide woodwork interiors, interior shelving, interior drawers fabricated from clear birch veneers over plywood cores; provide matching edge banding. Finish interior birch surfaces with the manufacturer's standard clear lacquer.

B. Solid Wood: Of type, cut, and finish matching the adjacent veneer work, unless otherwise indicated.

C. Provide all cabinet work hardware as required for proper operation.

D. All wood veneer casework, cabinetry and reception station components shall be factory finished unless otherwise indicated.

E. Provide casework with types of countertops indicated.

2.8 "FAUX WOOD" PANELING

A. Quality Standard: Fabricate "Faux Wood" paneling to comply with AWI Section 500 and its Division 500A; and AWI Section 1300.

B. Trim and Edges: Manufacturer's standard, integral tongue and groove reveal-type edges; compatible with grain and color of pre-finished panels.

C. Fire-Rated Paneling: Provide Premium Grade "faux wood" paneling as indicated below which are marked and classified for fire performance characteristics indicated by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

1. Species and Cuts: Refer to the Finish Schedule at the end of this section.

2.9 CLOSET, COAT AND OPEN SHELVING

A. Quality Standard: Comply with AWI Section 600.

B. Shelving for Opaque Finish: Provide "Custom" grade, Birch faced veneer core plywood with hardwood banding/edges.

C. Shelving for Transparent Finish: Provide "Premium" grade, clear birch faced veneer core plywood with hardwood edge banding/edges.

D. Shelving for Plastic Laminate Clad Finish: Provide "Premium" grade, high pressure plastic laminate cladding NEMA LD 3, Grade GP-50 and PF-42 for horizontal and post formed surfaces, respectively.

1. Colors, Patterns and Finishes: To match Architect's samples.

E. Shelving Core Construction: Provide veneer core plywood, unless otherwise selected by the Architect.

F. Shelf Brackets and Supports: Provide shelf brackets and supports of size required to support shelving widths indicated, BHMA No. B 84112, nickel zinc-plated steel.

G. Clothes Pole and Supports: Provide stainless steel clad pipe or tubing cut to lengths required, with polished chrome flanges; with one open top.

1. Size: 1-1/4" O.D., 0.087" wall thickness.

2. Center Brackets: Combination shelf and closet pole support wrought steel with manufacturer's standard enamel finish; complying with ANSI A156.16, Type B 84051.

3. Product: Provide model #1221 with end caps as manufactured by Grant, or approved equal.

2.10 STANDING AND RUNNING TRIM

A. General: Provide standing and running trim members including base trims as indicated on the drawings.

B. Quality Standard: Comply with AWI Section 300, Premium Grade.

C. Materials for Opaque Finish: For opaque trim in form of boards and worked products, provide lumber complying with the following requirements.

1. Species: Poplar, unless otherwise indicated.

D. Materials for Transparent Finish: For transparent trim in form of boards and worked products, provide veneer clad particleboard or veneer core plywood complying with the following requirements.

1. Species: Figured Makore to match WV-1, unless otherwise indicated.

2.11 WOOD DOOR FRAMES

A. Quality Standard: Comply with AWI Section 900.

1. Grade: Premium.

B. Wood Species: Any closed-grain hardwood listed in referenced woodworking standard.

2.12 CABINET HARDWARE AND ACCESSORIES

A. Cabinet and millwork hardware shall be provided and installed by the millwork fabricator.

1. Hardware shall include the type specified and shown on the drawings and shall be installed on units as required for operation. Equivalent products of other manufacturers may be approved by the Architect if compatible with other work of project.

2. Provide cabinet locks for all cabinets and drawers.

3. Provide premium quality hinges, pivots, and catches to properly accommodate each door size and style.

4. Provide slides to properly accommodate drawer size weight requirements and style. Equip each drawer with side mounted, full extension, ball bearing, nylon roller drawer slides.

5. Unless otherwise indicated, all cabinet hardware for similar conditions, shall be concealed and of one type and manufacturer (as shown typically on drawings and below) and shall be approved by the Architect for each condition.

6. Hardware Finish: Hardware shall have a satin chrome (US26D) finish, unless otherwise indicated.

B. Architectural Woodwork Hardware Schedule

1. Cabinet Locks: Provide surface mounted (back of doors) cabinet dead lock No. 0737 26D with 7/8" diameter cylinder lock 3/4" long and matching strike No. 7S as manufactured by CCL Security Products (formerly Corbin Cabinet Locks). Locks shall be keyed alike in each office and masterkeyed.

2. Magnetic Catches: Provide heavy-duty brass case with lifetime magnet.

3. Pulls: Provide hardwood "finger" pulls of straight grained hardwood as selected by the Architect. Profile as indicated on the drawings.

4. Cabinet Hinges: Provide European style "Duomatic" hinges fitted to the back of the inset doors with 120 deg swing and nickel plated finish as manufactured by Hafele. Provide baseplates as recommended by manufacturer for the specific applications.

5. Adjustable Shelf Supports: Provide 1/4" diameter flattened end metal shelf rests and ferrules with a (US26D) satin chrome finish, two to each end of shelf.

6. Floor Levelers: Provide adjustable floor levelers for casework and built-in woodwork at Judge's Bench, and as indicated; "Hafele" - model #M-10 x 30; or approved equal.

7. Computer Tub Assemblies: Provide the manufacturers standard self rimming pre-molded, pre-manufactured plastic computer monitor and keyboard tub assemblies, with pre-punched grommet/wire management port.

   a. Edge Design: Waterfall edges, unless otherwise indicated.

   b. Color: As selected by the Architect from the manufacturer's standard colors.

   c. Product: Provide "The Computer Tub/Next Generation", as manufactured by Doug Mockett & Company, Inc., or approved equal.

8. Grommets and Covers: Provide the manufacturers standard plastic grommet and grommet covers with wire management cut-outs/ports of the sizes, finishes and materials selected by the Architect..

   a. Sizes: As indicated.

   b. Colors/Finishes: As selected by the Architect from the manufacturer's standard.

   c. Product: Provide "Round Plastic Grommets", as manufactured by Doug Mockett & Company, Inc., or approved equal.

2.13 FACTORY FINISHING

A. Quality Standard: Comply with AWI Section 1500.

B. General: The entire finish of interior architectural woodwork is work of this section, regardless of whether factory-applied or applied after installation.

1. Factory Finishing: To the greatest extent possible, finish architectural woodwork at factory. Defer only final touch-up, cleaning and polishing for time after delivery and installation.

C. Field Finishing: The primary and prefinishing (if any) of interior architectural woodwork required to be performed at factory is work of this section. Refer to Division-9 sections for final finishing of installed architectural woodwork, requiring an opaque finish, and for material and application requirements of prime coats for woodwork not specified to receive final finish as work of this section.

D. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing of concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.

E. Transparent Finish: Provide AWI System #TR-01 Standard Lacquer, Premium Grade, open pore finish with stain and sheen to match approved sample.

1. Use water soluble aniline stains to achieve desired colors.

2. Sand between coats with #280 striated paper.

3. Final finishing shall be achieved using 100% Carnauba wax and fine grade steel wool.

F. Opaque Finish: Provide AWI System #OP-01 Standard Lacquer, Premium Grade, with color, effect and gloss to match approved sample.

G. Factory Prime: Provide prime coat paint as specified in Section 09900, for wood with field painted finish.

H. Concealed Portions: All concealed portions shall be finished to adequately balance the construction and control warpage. Concealed portions shall have one coat sealer minimum.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

B. Pre-Installation Meeting: Meet at project site prior to delivery of architectural woodwork and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Include in meeting the Contractor; Architect and other Owner Representatives (if any); installers of architectural woodwork, wet work such as plastering, other finishes, painting, mechanical work and electrical work; and firms or persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions. Proceed with work installation only when everyone concerned agrees that required ambient conditions can be properly maintained.

C. Deliver inserts and similar anchoring devices to be built into substrates, well in advance of time substrates are to be built.

D. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

3.2 INSTALLATION

A. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including countertops); and with no offset in flush adjoining surface, 1/16" maximum offsets in revealed adjoining surfaces.

B. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

C. Anchor woodwork securely with countersunk, concealed fasteners and blind nailing. Use fine finishing nails for exposed nailing, countersunk and filled flush, and matching transparent finish.

D. Standing, Running Trim and Rails: Install with minimum number of joints, using full-length pieces when possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, and comply with Quality Standards for joinery.

E. Fire-Retardant Woodwork: Handle, store and install in accordance with manufacturer's directions and as required to meet required classification or rating. Provide special fasteners, moldings, adhesives and other accessories as tested and listed for type of fire-retardant woodwork indicated.

F. Cabinets, Casework and Furniture: Install without distortion so that doors and drawers will fit openings properly and be accurately aligned. Adjust hardware to center doors and drawers in openings and for easy operation. Install hardware and accessory items as indicated. Maintain veneer sequence matching of casework with transparent finish.

G. Countertops: Anchor securely to base units and other support systems as indicated, or as required.

H. Faux Wood Paneling: Anchor custom pre-finished faux wood paneling to supporting substrate with the manufacturer's concealed panel hanger clips, and similar devices. Do not face nail.

I. Complete the finishing work specified in this section to whatever extent not completed at shop or before installation of woodwork.

J. Shelving: Complete the assembly of units and install in the areas indicated, with hardware and accessories as necessary.

1. Install additional supports and braces as required to anchor and attach shelving assemblies; and to meet specified loading requirements.

3.3 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Repair damaged and defective woodwork wherever possible to eliminate defects, functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, hardware, lubricate and make final adjustments for proper operation.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop applied finishes to restore damaged or soiled areas.

D. Protect architectural woodwork during remainder of construction period to ensure that work will be without damage or deterioration at time of acceptance.

3.4 FINISH SCHEDULE

A. General: Provide the following finishes for the architectural woodwork specified, and as indicated on the drawings.

1. B-2

Description	:	Painted Wood Base Trim
Specie	:	Poplar, unless otherwise indicated.
Size	:	As indicated on the Drawings.
Finish	:	Factory primed and field painted.

2. B-3

Description	:	Transparent Wood Base Trim
Specie	:	Figured Makore (veneer over plywood), unless otherwise indicated.
Size	:	As indicated on the Drawings.
Finish	:	Factory finished.

3. W-1

Description	:	"Faux Wood" Paneling System
Finish	:	#MMD - 308 / Tahoe Anigre, unless otherwise indicated.
Module Sizes	:	24 inches square, unless otherwise indicated.
Finish	:	Factory faux wood finish matching Architect's sample.

4. W-2

Description	:	"Faux Wood" Paneling System
Finish	:	#MMD - 716 / Tropical Mahogany, unless otherwise indicated.
Module Sizes	:	24 inches square, unless otherwise indicated.
Finish	:	Factory faux wood finish matching Architect's sample.

5. WV-1

Description	:	Wood Veneer for transparent finished woodwork.
Finish	:	Figured Makore, unless otherwise indicated.
Flitch	:	#96-01, as manufactured by U.S. Veneer Co.
Finish	:	Water based aniline stain and standard lacquer, matching Architect's sample.
Effect	:	Hand-rubbed medium gloss, unless otherwise indicated.

6. PL-1

Description	:	Plastic Laminate
Manufacturer	:	Nevamar, or approved equal.
Model	:	#MR-2-3T, unless otherwise indicated.
Color	:	Neutra Matrix Textured.
Gloss	:	Textured, unless otherwise indicated.

7. PL-2

Description	:	Plastic Laminate
Manufacturer	:	Nevamar, or approved equal.
Model	:	#S-2-3T, unless otherwise indicated.
Color	:	Champagne Textured.
Gloss	:	Textured, unless otherwise indicated.

8. PL-3

Description	:	Plastic Laminate
Manufacturer	:	Nevamar, or approved equal.
Model	:	#MR-2-7T, unless otherwise indicated.
Color	:	Bronze Matrix Textured.
Gloss	:	Textured, unless otherwise indicated.

END OF SECTION

SECTION 07100 - SHEET MEMBRANE WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide sheet membrane waterproofing in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Sheet membrane waterproofing system for mud-set tile, as indicated.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete.
2. Section 09310 - Tile.
3. Division 15 - Plumbing Work.

1.2 QUALITY ASSURANCE

A. Special Experience Requirements:

1. Installer Qualifications: A firm with not less than five waterproofing projects similar to requirements for this project within the last eight years.

2. Manufacturer's Qualifications: Obtain primary waterproofing materials from a single manufacturer with not less than 8 years of successful experience in sheet waterproofing work. Provide secondary materials only as recommended by manufacturer of primary materials.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications, installation instructions, and general recommendations for each material required. Include data substantiating that materials comply with requirements.

1.4 JOB CONDITIONS

A. Substrate: Proceed with work of this section only after substrate construction and penetrating work have been completed.

B. Ventilation: Provide ventilation to remove hazardous fumes during application and cure of solvent based components in enclosed spaces, and maintain ventilation until full cure.

C. Weather: Proceed with work of this section only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations.

1.5 WARRANTY

A. General: Submit a written warranty executed by the manufacturer, agreeing to repair or replace sheet membrane waterproofing systems that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

B. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include but are not limited to the following:

1. Mirafi, Div. Of Nicolon Corp.
2. Monsey-Bakor
3. WR Grace & Co.
4. Pecora Corp.

2.2 SHEET MEMBRANE WATERPROOFING, MATERIAL

A. Self-adhering membrane of rubberized asphalt integrally bonded to polyethylene sheeting, formed into uniform flexible sheets of thickness shown, or not less than 60 mils if no thickness is shown, complying with the following:

1. Tensile Strength: 250 psi min; ASTM D 412.
2. Ultimate Elongation: 300 percent min.; ASTM D 412.
3. Brittleness Temperature: -25 deg. F, ASTM D 146; no effect.
4. Hydrostatic Head Resistance: 150 feet min.
5. Water Absorption: Not more than 0.2 percent weight gain after 48 hours or immersion at 70 deg. F; ASTM D 570.

B. Products: Subject to compliance with requirements, provide one of the following:

1. Miradri 860/861; Nicolon/Mirafi Group.
2. Bituthene; W.R. Grace & Co.
3. Duramem 700-SM; Pecora Corp.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Provide type of concrete primer recommended by manufacturer of sheet waterproofing material for applications required.

B. Flashing Materials: Except as otherwise indicated, provide types of flexible sheet material for flashing as recommended by waterproofing sheet manufacturer.

C. Protection Board: Provide type of protection board recommended by waterproofing sheet manufacturer. Include adhesives recommended by manufacturer.

PART 3 - EXECUTION

3.1 CONDITION OF SURFACES

A. Examine substrate and conditions under which sheet waterproofing work is to be performed. Proceed with work after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF SUBSTRATE

A. On concrete decks, immediately before placing waterproofing sheet, grind or abrasive-blast surface lightly to remove projections that might penetrate sheet and curing compounds that would interfere with fully bonded systems. Clean deck of loose material by brooming and vacuuming.

B. On vertical surfaces chip off projections where necessary to properly place and adhere waterproofing and flashing sheets.

C. Apply primer to substrate surfaces at rate recommended by manufacturer of primary waterproofing materials. Prime only area that will be covered by waterproofing membrane in same working day. Reprime areas not covered by waterproofing membrane within 24 hours.

3.3 INSTALLATION

A. Comply with manufacturer's instructions for handling and installing sheet waterproofing materials.

B. Coordinate installing waterproofing materials with associated work to provide complete system complying with combined recommendations by manufacturers and installers involved in Work. Schedule installation to minimize exposure of sheet waterproofing materials.

C. Seal projections through membrane and seal seams. Bond to vertical surfaces and also, where shown or recommended by manufacturer, bond to horizontal surfaces.

D. Expansion Joints: Install joint filler with protruding rounded surface, as recommended by manufacturer.

E. Apply continuous 8 inch wide strip of membrane on joint, followed by membrane application.

F. Install sheet-type flashings where recommended by prime materials manufacturer. Except as otherwise shown, extend flashings not less than 4" onto adjacent perpendicular surfaces.

G. Protection Board: Install protection board over completed membrane, complying with manufacturer's recommendations for both waterproofing sheet and protection course materials.

3.4 FIELD QUALITY CONTROL

A. In-Place Testing: Before completed membranes on horizontal surfaces are covered by protection course or other work, where feasable, test for leaks with a 1 inch depth of water maintained over the high point for 24 hours. Repair any leaks observed; repeat test and repairs until no leaks remain.

3.5 CLEANING

A. General: After completion, remove any masking materials and stains from exposed surfaces caused by waterproofing installation.

3.6 PROTECTION

A. General: Protect completed membrane during installation of other materials or processes over membrane and throughout remainder of construction period. Do not allow traffic of any type on unprotected membrane.

END OF SECTION

SECTION 07255 - FIREPROOF PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide fireproof patching in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Interior type fireproof patching of existing fireproofing which has become damaged resulting from construction operations.

B. Related Sections

1. Section 05120 - Structural Steel.
2. Section 05310 - Steel Decking.

1.2 QUALITY ASSURANCE

A. Code Requirements: *Unless otherwise indicated apply* fireproof patching to obtain the necessary ratings required in Table 3-4 of the New York City Building Code for columns, girders, trusses and floor construction including beams and deck.

B. Installer Qualifications: A firm with not less than two fireproof patching projects similar to requirements for this project within the last five years.

C. Fire-Endurance Ratings: Provide products which have been tested in accordance with ASTM E 119 for fire-resistance, and rated by UL or other industry-recognized agency for the required resistance.

D. Fire-Spread Ratings: Provide products which have been tested and listed by UL for required surface burning characteristics (flame spread, fuel contributed, smoke developed) in accordance with ASTM E 84. Provide completed installations rated at a maximum flame spread of 25.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications and installation instructions for material required. Attach a copy of New York City MEA and/or BSA approvals for each product.

B. Schedule of Fireproofing Categories: Submit a schedule of fireproofing categories. For each type of construction element, list the UL Design Number to be complied with. Attach a copy of each UL Design Number listed.

C. Certified Tests: With product data, submit certified test reports on performances, including burning characteristics, density, compressive strength, bond strength, hardness, water absorption and corrosion resistance and required thicknesses for every design condition to comply with New York City Building Code and BOCA ratings, whichever is more strict.

1.4 SEQUENCING AND COORDINATION

A. General: Coordinate fireproof patching with other work so that it will not be exposed to weather and other damaging conditions during subsequent work, will be installed before enclosing or concealing work, will provide time for inspection/testing and subsequent correction of defective fireproofing, and will minimize time other work to be protected by fireproofing is exposed to possible fire hazards.

1.5 WARRANTY

A. General: The warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

B. Warranty: Submit a written warranty, executed by Contractor and cosigned by Installer, agreeing to repair or replace sprayed-on fireproof patching that has failed within the specified warranty period. Failures include but are not limited to the following:

1. Cracking, flaking, eroding in excess of specified requirements, peeling, and delaminating of fireproof patching from substrates due to defective materials and workmanship within the specified warranty period.

2. Not covered under the warranty are failures attributable to damage by occupants and Owner's maintenance personnel, exposure to environmental conditions other than those investigated and approved during fire-response testing, and to other causes not reasonably foreseeable under conditions of normal use.

C. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, INTERIOR TYPE

A. General: Provide cementitious fireproof patching materials, factory-mixed dry formulation of gypsum or portland cement binders and lightweight mineral aggregates and be asbestos-free; formulated for trowel or sprayed-on applications; for forming a rigid, porous, noncombustible covering of uniform density and thickness, applied in one or more courses; to provide fire-endurance ratings and thicknesses matching the in-place adjacent fireproofing.

1. Product: Provide fireproof patching materials identical; or otherwise 100% compatible with the existing in-place sprayed-on materials.

2.2 AUXILIARY MATERIALS

A. Installer of fireproof patching materials shall certify prior to application that the substrates are compatible with the fireproofing materials in-place and will not affect the bond strength.

1. If the installer cannot certify to the above a bonding adhesive shall be applied or a mechanical bond shall be used.

B. Adhesive for Bonding Fireproofing: Type recommended by fireproofing manufacturer to achieve the specified bond and deflection requirements.

C. Metal Lath: Provide 3.4 lb. per sq. yd. expanded galvanized diamond steel lath, with reinforcing and anchorage devices as appropriate for substrate, and complying with applicable fire-endurance tests. Provide corner beads and other lathing accessories of standard design and weight.

D. Sealer: Fireproofing manufacturer's recommended spray-on type sealer, designed to reduce flaking, dusting, and spalling, but without effecting surface burning of fireproofing.

1. Sealer shall have a fugitive dye or be pigmented.

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

A. Examine the substrates and conditions that may affect fireproofing work. Proceed with work after unsatisfactory conditions have been corrected.

B. Clean substrates of substances which might be incompatible with or interfere with bond of fireproof patching, including oil, dirt, scale, rust and non-compatible shop primer. Remove ill-timed work which might interfere with installation of fireproof patching.

C. Prime substrates where recommended by manufacturer, covering surfaces to receive direct-bonded application of fireproofing, except where acceptable shop primer (specified as work of another Section) is in satisfactory condition to receive fireproof patching, as determined by Installer.

D. For exposed fireproofing applications repair substrates to remove any surface imperfections that could impair bond, affect uniformity of texture and thickness in finished surface. Remove minor projections and fill voids that would telegraph through fireproofing after application.

E. Cover other work which might be damaged by fall-out, spatter, or over-spray of fireproof patching materials. Provide temporary protections to ensure adequate ambient conditions.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's instructions and recommendations. Consult with manufacturer's technical representative for conditions not covered by printed instructions.

B. Coat substrate with bonding adhesive where direct bonding of fireproofing is indicated and where use of adhesive is required or recommended by manufacturer.

C. Mechanical Bond Requirements: A mechanical bond shall be provided when any of the proposed conditions require a mechanical bond to achieve the required fire resistance rating.

D. Install metal lath reinforcements and substrates to receive fireproofing, as required to comply with fire-endurance ratings and where required for mechanical bond. Anchor securely to substrates in a manner which will support fireproofing through fire exposures of periods indicated.

E. Install lath accessories including corner beads and other stripping to be used as screeds for or reinforcement of fire-proofing material.

F. Provide sprayed-in-place installation of patching materials to the greatest extent possible. Following application operation in each area, complete the coverage by troweled, tamping or other appropriate placement method recommended by manufacturer and required to meet performance requirements.

G. Maintain ambient conditions during installation and for cure period following installation, as recommended by manufacturer. Provide ventilation and avoid excessive rate of drying. Protect from exposure to sun.

H. Install sealer coating over patched areas of fireproofing, limiting coverage to manufacturer's recommendations for most effectiveness without degradation of fire-spread ratings.

3.3 RATING REQUIREMENTS

A. Provide thicknesses as required for compliance with indicated fire-endurance ratings. Extend fireproofing full thickness over entire area of each substrate to be protected. Except as otherwise recommended by manufacturer, install body of fireproof covering material in a single course, and as follows.

B. Unless otherwise indicated apply fireproof patching in thicknesses and densities matching the existing adjacent in-place materials, but not less than that required to achieve fire resistance ratings required by authorities having jurisdiction.

3.4 CLEANING, PATCHING, PROTECTION

A. Cleaning: Immediately upon completion of application in each area remove over-spray, spatter and fall-out of materials and clean surfaces to remove evidence of soiling.

1. Repair or replace damaged work to restore surfaces to acceptable condition.

B. Coordination: Patch fireproofing which has been cut, to maintain complete coverages of full thickness on substrates to be protected. Trowel-applied fireproofing is acceptable for patching. Do not allow work requiring patchings to be concealed before patching is completed.

C. Protection: Installer shall advise Contractor of protection requirements for fireproof patching, which will ensure that fireproofing will be substantially without damage or deterioration at time of Substantial Completion of project. Provide protection from reasonably predictable harmful exposures. Repair or replace work which has not been successfully protected.

END OF SECTION

SECTION 07270 - FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide firestopping in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Provide fire safing at openings in floors and fire rated walls and partitions to prevent the passage of fire, smoke or toxic gases.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete.
2. Section 04200 - Unit Masonry.
3. Section 07200 - Building Insulation.
4. Section 07255 - Fireproof Patching.
5. Section 07900 - Joint Sealers.
6. Section 09250 - Gypsum Board Assemblies.
7. Divisions 15 and 16 - Mechanical and Electrical.

1.2 QUALITY ASSURANCE

A. Qualifications: The work of this Section shall be performed by a qualified and experienced Installer, acceptable to the Architect. The term "Installer", as used herein, shall mean a firm of established reputation; which has been trained by the Manufacturer in the proper installation of fire safing materials and which is regularly engaged in, and maintains a regular force of workmen skilled in the installation of fire safing materials of the type specified.

B. Before proceeding with the work, submit three copies of a list of several comparable projects of similar work that the Installer has completed within the past three years, giving the job locations, names of the owners, their telephone numbers and the date on which the work on each project was started and completed.

1.3 REFERENCES

A. Codes and Regulations: Comply with NFPA Codes, New York MEA requirements, and applicable regulations of governmental authorities having jurisdiction.

1.4 SUBMITTALS

A. Shop Drawings

1. Submit shop drawings for all work of this Section; approval shall be obtained before materials are fabricated or delivered to the site. All drawings and details shall be submitted on 8-1/2" by 11" size paper.

2. Shop drawings shall indicate the locations and types of the various fire safing materials to be used throughout the building, and materials and methods of installation of damming for the various floor, wall and ceiling construction. Details of damming shall be large scale and shall indicate materials and methods of installation.

3. List of Conditions: Submit with the shop drawings a list of all conditions to be expected. Reference the applicable UL Test Numbers and New York City MEA Numbers (where applicable) for each condition.

B. Samples: Submit samples of all materials specified in this Section to be used on the Project.

C. Product Data: Submit manufacturer's technical data and installation instructions.

D. Test Reports: Submit copies of test reports, by an independent testing laboratory, indicating that the fire safing materials comply with the specified requirements.

1.5 FIELD QUALITY CONTROL

A. Tests for thickness and density of applied material will be performed by an independent testing agency selected and paid for by the Owner. Where test results are unsatisfactory in sample areas, additional tests in other areas may be made. Such further testing, if required, shall be by the same testing agency but shall be paid for by the Installer.

PART 2 - PRODUCTS

2.1 MINERAL FIBER FIRE-SAFING INSULATION

A. Provide "Thermafiber Safing" insulation by USG Interiors, Inc. or approved equal. Density shall be 4 pcf, and thickness to suit condition.

B. Provide 20 gauge minimum metal plate where required for firesafing support to comply with fire ratings.

C. Do not use fibrous safing insulation unless it is in conjunction with a compatible smoke seal as specified herein.

2.2 MINERAL WOOL

A. Loose mineral wool, rated noncombustible when tested according to ASTM E 136, free of asbestos and glass fiber, and suitable for stuffing into metal deck flutes to an in-place density of 6 to 12 pcf.

2.3 FIRESTOPPING SEALANTS

A. Provide a fire stop sealant classified for both flame and temperature ratings under ASTM E 814.

B. Acceptable materials are USG Interiors Smoke Seal Compound, Dow Corning Fire Stop Sealant, Bio Fireshield "Biotherm", Bio Stop 500 Intumescent Fire Caulk, 3M Fire-Barrier Caulk, G.E. RTV 7403 or approved equal.

2.4 FIRESTOPPING MORTAR

A. Provide Portland cement/flyash mortar with an air dried density of 40 to 55 lbs./cu.ft. Mortar shall be classified for both flame and temperature ratings under ASTM E 814.

B. Acceptable materials are Novasit K-10 by Bio Fireshield or approved equal.

2.5 ACCESSORIES

A. Provide anchorage assemblies complying with U.L. designs and other components and accessories as needed.

PART 3 - EXECUTION

3.1 DELIVERY AND STORAGE

A. Deliver materials and products in unopened packages and containers, clearly indicating name of manufacturer and U.L. Labeling. Store and handle in strict compliance with manufacturers' instructions and recommendations. Protect from damage.

1. Protect materials from freezing or overheating in accordance with manufacturers' instructions.

3.2 INSPECTION

A. Examine all surfaces to which the firestopping materials are to be applied, and notify the Architect in writing of any conditions detrimental to the proper and expeditious installation of the work. Starting of work within an area shall be construed as acceptance of the conditions of that area.

B. Thoroughly clean all surfaces to receive firestopping materials to eliminate mill scale, dirt, grime, oil, grease, dust, loose rust or paint, and all other foreign material.

C. Cleaning shall be accomplished just prior to application of firestopping materials.

3.3 INSTALLATION/GENERAL

A. The Contractor shall select the material and UL test assemblies to be used as may be required for each type of material, location, rating and penetration or hole size. Do not proceed with the work until all submittals have been fully approved.

B. Materials and equipment shall be as approved by the manufacturer. Application procedures shall be in strict accordance with the manufacturer's directions and specifications. Only experienced, skilled mechanics approved by the materials manufacturers shall be allowed to place the materials.

C. Provide firestopping materials and thicknesses as required to provide indicated ratings. Where not otherwise indicated, comply with U.L. standard designs. In multiple layer work, offset joints by at least 6 inches.

D. Anchor firestopping using manufacturers' recommended system and in compliance with U.L. standard designs.

E. Install firestopping without gaps and voids of any kind. Do not use damaged materials. Remove and replace nonfitting or disturbed work. Do not use fire safing materials containing solvents.

3.4 MINERAL SAFING INSULATION

A. Use mineral safing insulation at the exterior perimeter, at floor slab edges and the curtainwall system to provide the required fire-rated seal. Apply in continuous lengths, using manufacturer standard safing clips. Compress insulation until stable without movement.

B. Use mineral safing insulation at top of fire-rated partitions at underside of metal deck to provide complete fire-rated seal.

C. Mineral safing insulation must be used in conjunction with a sealant or foam fire stop to ensure a continuous smoke seal.

3.5 FIRESTOPPING SEALANT

A. Use firestopping sealant at narrow joints at fire rated floor and wall penetrations, and at penetrations subject to vibration or movement. Typical penetrations requiring sealant are plumbing and HVAC piping, electrical conduit, and ductwork.

B. Where openings are large enough, use mineral safing insulation in thicknesses required to dam the joint, and apply 1/2 inch minimum depth of sealant, or as required to achieve the rated assembly.

3.6 FIRESTOPPING MORTAR

A. Mortar may be used to firestop all large, non-moving openings in fire-rated assemblies, including multiple openings in floor slabs.

B. Mix mortar with clean water in accordance with the manufacturer's printed instructions. Wet all surfaces with water prior to application of mortar. Apply by hand or pump and vibrate in penetrations to prevent voids from forming.

C. Do not apply mortar if ambient or substrate temperature is below 35 deg. F during the 24 hour period before application.

3.7 FIELD QUALITY CONTROL

A. Coordinate installation of firestopping work with other work to minimize cutting and removal of installed firestopping. As work of other trades is completed, review firestopping work and repair or replace work which has been damaged or removed. Inspections will be performed to verify compliance with requirements.

3.8 CLEANING AND PROTECTION

A. Upon completion of the work, remove all unused materials from the site. Clean floors, walls and other adjacent surfaces that are stained, marred or otherwise damaged by this work. Leave all work and the adjacent areas in a clean condition.

B. Protect all completed work from damage, by methods recommended by the manufacturer of installed materials.

END OF SECTION

SECTION 07410 - METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide manufactured wall panel systems in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Factory-assembled, insulated wall panels with gasketed seams.

B. Related Sections

1. Section 03300 - Cast In Place Concrete.
2. Section 05120 - Structural Steel.
3. Section 06100 - Rough Carpentry.
4. Section 07510 - Membrane Roofing.
5. Section 07600 - Sheet Metal Flashing and Trim.
6. Section 07900 - Joint Sealants.

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide manufactured wall panel assemblies complying with performance requirements indicated and capable of withstanding structural movement, thermally induced movement, and exposure to weather without failure or infiltration of water into the building interior.

B. Air Infiltration: Provide manufactured wall panel assemblies with permanent resistance to air leakage through assembly of not more than 0.09 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 4.0 lbf/sq. ft.

C. Water Penetration: Provide manufactured wall panel assemblies with no water penetration as defined in the test method when tested according to ASTM E 331 at a minimum differential pressure of 20 percent of inward acting, wind-load design pressure of not less than 6.24 lb/sq. ft. and not more than 12.0 lb/sq. ft.

D. Structural Performance: Provide manufactured wall panel assemblies capable of withstanding design wind loads indicated under in-service conditions with deflection no greater than the following, based on testing manufacturer's standard units according to ASTM E 330 by a qualified independent testing and inspecting agency.

1. Maximum Deflection: 1/180 of the span.

1.3 SUBMITTALS

A. Product Data: Include manufacturer's product specifications, standard details, certified product test results, and general recommendations, as applicable to materials and finishes for each component and for total panel assemblies.

B. Shop Drawings: Show layouts of panels, details of corner conditions, joints, panel profiles, supports, anchorages, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work.

1. For installed products indicated to comply with certain design loadings, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Initial Selection: Manufacturer's color charts or chips showing the full range of colors, textures, and patterns available for wall panels with factory-applied finishes.

D. Samples for Verification: Provide sample panels 12 inches long by actual panel width, in the profile, style, color, and texture indicated. Include clips, caps, battens, fasteners, closures, and other exposed panel accessories.

E. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

F. Product Test Reports: Indicate compliance of manufactured wall panel assemblies and materials with performance and other requirements based on comprehensive testing of current products.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed metal wall panel projects similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated.

C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated without delaying the Work, as documented according to *ASTM E 699*.

D. Fire-Test-Response Characteristics: Where fire-resistance-rated wall panel assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: As indicated by design designations in UL's "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

E. Mockups: Before installing wall panels, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using exposed and concealed materials indicated for the completed Work.

1. Locate mockups in the location and of the size indicated or, if not indicated, as directed by Architect.

2. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.

3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Architect's approval of mockups before proceeding with construction of wall panels.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

   a. When directed, remove mockups from Project site.

   b. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver panels and other components so they will not be damaged or deformed. Package panels for protection against damage during transportation or handling.

B. Handling: Exercise care in unloading, storing, and erecting wall panels to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store panels to ensure dryness. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify location of structural members and openings in substrates by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.7 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on metal wall panels within the specified warranty period and agreeing to repair finish or replace wall panels that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to, color fade, chalking, cracking, peeling, and loss of film integrity.

C. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - *PRODUCTS*

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide factory assembled, insulated metal wall panels "# B-3-B" as manufactured by Architectural Manufacturing Co., or approved equal.

1. Panel Thickness: 3-1/4 inches, unless otherwise indicated.

2.2 METALS AND FINISHES

A. Aluminum Sheet Prepainted with Coil Coating: Aluminum sheet complying with ASTM B 209 for alclad alloy 3003 or 3004, with temper as required to suit forming operations, prepainted by the coil-coating process and complying with the following requirements:

1. Surface: Manufacturer's standard stucco-embossed finish.

2. Exposed Finish for Exterior Panels: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.

   a. Fluoropolymer 3-Coat Coating System: Manufacturer's standard 3-coat, thermocured system composed of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 1402, Test Method No. 7.

      1) Color and Gloss: Match Architect's sample.

3. Exposed Finish for Interior Panels: Apply the following:

   a. Prime Coating: Where painting after installation is indicated, provide pretreatment and white or light-colored, baked-on polyester primer coat; with a minimum dry film thickness of 0.2 mil.

4. Prime Coat for Concealed Surfaces: Apply pretreatment and white or light-colored, baked-on polyester primer coat; with a minimum dry film thickness of 0.2 mil.

2.3 WALL PANEL ASSEMBLIES

A. Insulated Wall Panels: Fabricate panels in a manner that will eliminate condensation on the interior side. Design joints between panels to form weathertight seals. Insulating core of panels shall provide U-value indicated.

1. Provide factory-assembled, wall panel units consisting of a specified core material laminated or otherwise securely bonded to metal interior and exterior face sheets.

   a. Exterior Face Sheet: 0.050-inch- thick, stucco-embossed-surface aluminum sheets with organic coating finish, unless otherwise indicated.

b. Interior Face Sheet: 20 gage thick, smooth-surface hot dip galvanized steel sheet, unless otherwise indicated.

2.4 CORE MATERIALS

A. Glass-Fiberboard Insulation: Thermal insulation combining glass fibers with thermosetting resin binders to comply with ASTM C 612, Type IA and IB, with a nominal density of 3 lb/cu. ft. and a thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F.

2.5 MISCELLANEOUS MATERIALS

A. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.

1. Use stainless-steel fasteners for exterior applications and galvanized steel fasteners for interior applications.

2. Provide exposed fasteners with heads matching color of panel by means of plastic caps or factory-applied coating.

3. Provide metal-backed neoprene washers under heads of exposed fasteners located on weather side of panels.

B. Accessories: Unless otherwise specified, provide components required for a complete wall panel assembly including trim, copings, fasciae, mullions, sills, corner units, clips, seam covers, flashings, louvers, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of panels.

1. Refer to "Section 07600 - Flashing and Sheet Metal" for matching leader and gutter assemblies.

2. Closure Strips: Closed-cell, self-extinguishing, expanded, cellular, rubber or cross-linked, polyolefin-foam flexible closure strips. Cut or premold to match configuration of panels. Provide closure strips where indicated or necessary to ensure weathertight construction.

3. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

4. Joint Sealant: One-part elastomeric polyurethane, polysulfide, or silicone-rubber sealant as recommended by panel manufacturer.

C. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat, unless otherwise indicated. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.6 FABRICATION

A. General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Apply bituminous coating or other permanent separation materials on concealed panel surfaces where panels would otherwise be in direct contact with substrate materials that are non-compatible or could result in corrosion or deterioration of either materials or finishes.

C. Fabricate panel joints with captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will minimize noise from movements within panel assembly.

2.7 SECONDARY FRAMING

A. Panel Supports and Anchorage: Provide girts, furring channels, angles, plates, bracing, and other secondary framing members.

1. Girts: C- or Z-shaped sections fabricated from 0.0598-inch- thick, shop-painted, roll-formed steel.

2. Flange and Sag Bracing: 1-5/8-by-1-5/8-inch angles, fabricated from 0.0598-inch-thick, shop-painted, roll-formed steel.

3. Base or Sill Angles: Fabricate from 0.079-inch- thick, cold-formed, galvanized steel sections.

4. Secondary structural members, except columns and beams, shall be manufacturer's standard sections fabricated from 0.079-inch- thick, cold-formed galvanized steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements indicated for conditions affecting performance of metal panel walls.

1. Panel Supports and Anchorage: Examine wall framing to verify that girts, angles, and other secondary structural panel support members and anchorage have been installed to meet requirements of panel manufacturer.

2. Do not proceed with wall panel installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordinate metal wall panels with rain drainage work; flashing; trim; and construction of soffits, roofing, parapets, walls, and other adjoining work to provide a leakproof, secure, and non-corrosive installation.

B. Promptly remove protective film, if any, from exposed surfaces of metal panels. Strip with care to avoid damage to finish.

C. Secondary Structural Supports: Install girts, angles, and other secondary structural panel support members and anchorage according to the Light Gage Structural Institute's "Guide Specifications."

3.3 PANEL INSTALLATION

A. General: Comply with panel manufacturer's written instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cutting exterior panels by torch is not permitted.

2. Install panels with concealed fasteners.

3. Locate and space fasteners in true alignment. Use proper tools to obtain controlled, uniform compression for positive seal without rupture of neoprene washer.

B. Accessories: Install components required for a complete wall panel assembly including trim, copings, fasciae, mullions, sills, corner units, clips, seam covers, flashings, louvers, sealants, gaskets, fillers, closure strips, and similar items.

5. Refer to "Section 07600 - Flashing and Sheet Metal" for additional requirements pertaining to rain drainage assemblies.

C. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not otherwise indicated, types recommended by panel manufacturer.

1. Install weatherseal to prevent air and moisture penetration. Flash and seal panels at ends and intersections with other materials with rubber, neoprene, or other closures to exclude weather.

2. Seal panel end laps with a bead of tape or sealant, full width of panel. Seal side joints where recommended by panel manufacturer.

3. Prepare joints and apply sealants to comply with requirements of "Section 07900 - Joint Sealants."

D. Wall Panels: Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as necessary for waterproofing. Handle and apply sealant and back-up according to sealant manufacturer's written instructions.

1. Align bottom of wall panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.

2. Install screw fasteners with power tools having controlled torque adjusted to compress neoprene washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

3. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

E. Separate dissimilar metals by painting each metal surface in area of contact with a bituminous coating or by other permanent separation as recommended by manufacturers of dissimilar metals.

F. Coat back side of metal panels with bituminous coating where it will contact wood, ferrous metal, or cementitious construction.

G. Installation Tolerances: Shim and align panel units within installed tolerance of 1/4 inch in 20 feet on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.4 CLEANING AND PROTECTING

A. Damaged Units: Replace panels and other components of the Work that have been damaged or have deteriorated beyond successful repair.

B. Cleaning: Remove temporary protective coverings, immediately after panel installation. Clean finished surfaces as recommended by manufacturer and maintain in a clean condition during construction.

END OF SECTION

SECTION 07530 - MEMBRANE ROOFING AND REPAIRS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide membrane roofing and repairs in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Cold applied membrane roofing and repair system.

2. Roof insulation.

3. Substrate cleaners and primers, gypsum board roof underlayment, roof insulation, reinforcing fleece/fabric, flashings, aggregate, and other accessory items required.

B. Related Sections

1. Section 02070 - Selective Demolition.
2. Section 03300 - Cast-In-Place Concrete.
3. Section 05300 - Metal Decking.
4. Section 06100 - Rough Carpentry.
5. Section 07410 - Metal Wall Panels.
6. Section 07600 - Flashing and Sheet Metal.
7. Section 07900 - Joint Sealers.
8. Division 15 and 16 - Mechanical and Electrical Work.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

A. Performance Requirements, General: Provide fluid-applied roofing membrane system that is watertight and complies with performance requirements specified, as demonstrated by testing performed by a nationally recognized independent testing laboratory of manufacturer's standard systems according to test methods indicated.

1.2 DEFINITIONS

A. Thermal Resistivity (r-value) is the reciprocal of thermal conductivity (k-value) which is the rate of heat flow through a homogenous material exactly 1 inch thick. Thermal resistivity (r-value) is expressed by the temperature difference in degrees F between the two parallel surfaces required to cause 1 BTU to flow through 1 sq. ft. of a homogenous material exactly 1 inch thick per hour at the mean temperature indicated.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data, specifications, physical properties, installation instructions and recommendations from manufacturers of fluid applied roofing system. Include data to show that materials comply with requirements.

B. Samples: Submit 12" square samples of cured roofing assembly, roof insulation and accessories. Include sets of samples for each different type of fastener proposed.

C. Shop Drawings: Submit shop drawings showing layout and installation of product components, anchorage details, roof penetrations, vertical intersections, roof slope, and other conditions including plans, elevations, sections and large scale details of system components and roof tie-in interface.

D. Installer Certificates: Submit roofing manufacturer's signed certificates, certifying that the Installers comply with requirements of "Quality Assurance" article.

1. Include with the certification, a list of not less than five projects completed in the past three years similar in materials, size and scope. List the applicable project names, addresses, Architects and Owners.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is approved in writing by the cold applied fluid membrane manufacturer as qualified to install manufacturer's product, who employs only persons trained and approved by the membrane manufacturer, and who has successfully

completed at least five roofing systems similar in material, design, and extent to that indicated for this Project.

1. Work associated with cold applied fluid membrane roofing, including insulation, flashing assemblies, and joint sealers, is to be performed by Installer of roofing.

B. Pre-Roofing Conference: Prior to installation of fluid applied roofing and associated work, meet with Installer, roofing foreman, roofing manufacturer, installers of related work, Architect, Contractor and other entities concerned with roofing performance. Record discussions and agreements and furnish copy to each participant. Provide at least 72 hours advance notice to participants prior to convening pre-roofing conference.

C. Performance Requirements: Provide cold applied fluid membrane roofing assemblies which attain a minimum fire test exposure of Class A. Roof assemblies must have B.S. & A designations or comply with the NYC code requirements for RS-10; ANSI E 108.

D. Single Source Responsibility: Provide fluid applied membrane roofing primary and secondary materials, including accessories, from a single manufacturer. The primary and secondary materials shall include, but not be limited to, cold applied multi-component polyester roofing membrane, multi-component polyurethane primer, reinforcing, flashings, moisture barrier, insulation, and aggregate.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver fluid applied roof system materials to job site in manufacturer's original, unopened containers, bearing manufacturer's name and label and the following information:

1. Product name.
2. Product description.
3. Batch number under which product was produced.
4. National standards with which the product complies.
5. Application instructions.

B. Protect insulation materials from physical damage and from deterioration by moisture, weather, and other detrimental conditions. Do not expose insulation to temperatures above 165 deg F, sunlight for extended periods of time, flame, or other ignition sources. Store inside, covered with opaque plastic sheet, ventilated, and in a dry location. Comply with manufacturer's recommendations for handling, storage, and protection during installation.

1.6 PROJECT CONDITIONS

A. Substrate: Proceed with fluid applied membrane application only after substrate construction and penetrating work have been completed.

B. Weather: Proceed with fluid applied membrane application only when existing and forecasted weather conditions will permit work to be performed according to manufacturer's recommendations.

1.7 WARRANTY

A. General Warranty: The warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Roofing System Manufacturer's Total Warranty: Submit a written warranty, without monetary limitation, signed by roofing system installer and materials manufacturer agreeing to promptly repair leaks in the roof membrane and base flashings, including the removal and replacement of the fluid applied membrane and base flashings resulting from defects in materials or workmanship for the following warranty period:

1. Warranty Period: 20 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide a cold applied reinforced fluid roofing system "Kemperol V210" as manufactured by Kemper System, Inc.

2.2 FLUID-APPLIED MEMBRANE ROOFING

A. Provide a cold applied, fluid membrane, approximately 1/4 inch thick, consisting of a two-component polyester-resin and catalyst with proprietary additives over a polyurethane primer; which meets the following physical properties:

	Properties	Test Method	Results
1.	Fire Resistance	ASTM E 108	Class A
2.	Tensile Strength	ASTM D 412	2031 psi @ 32 deg. F. 1218 psi @ 73 deg. F. 479 psi @ 149 deg. F.
3.	Elongation	ASTM C 412	69.4% @ 32 deg. F. 62.3% @ 73 deg. F. 47.7% @ 149 deg. F.
4.	Bond Strength	ASTM D 413	432 psi to concrete.
5.	Bond Integrity		Thermal shock - unaffected.
6.	Water Absorption		Less than 1% by volume.
7.	Water Vapor Permeability	ASTM E 96	45-48 grains/sf/24 hr.
8.	Accelerated Weathering	ASTM G 23	2,000 hrs. No change.

2.3 AUXILIARY MATERIALS

A. General: Provide related roofing materials as manufactured by or acceptable to the roof membrane manufacturer; including but not limited to primer, adhesive, cement, and sealant.

B. Flashing: Manufacturer's standard fleece/fabric reinforced polyester-polyurethane flashing system matching the roof membrane.

C. Surface Primer: Manufacturer's standard two component, solvent free, high solids polyurethane resin-type primer "Kemperol D Primer" as manufactured by Kemper Systems, Inc.

D. Fabric Reinforcing: Manufacturer's 70 mil thick, non-woven, needle punched, polyester reinforcing material "Kemperol Fleece 200" as manufactured by Kemper Systems, Inc.

F. Accessories: Types recommended by manufacturer of fluid applied roofing.

2.5 INSULATING MATERIALS

A. General: Provide preformed, roofing insulation boards that comply with requirements, selected from manufacturer's standard sizes and of thicknesses indicated.

B. Polyisocyanurate Board Insulation: Rigid, cellular polyisocyanurate thermal insulation with core formed by using HCFCs as blowing agents complying with ASTM C 1289, classified by facer type as follows:

1. Facer Type: Type II, felt or glass-fiber mat on both major surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roof substrates to receive fluid applied roofing system, with Installer present, for compliance with requirements for curing, finishing, slope, and other conditions affecting performance of the membrane application. Do not proceed with installation until unsatisfactory conditions have been corrected.

1. Coordinate the existing roof removal with the work specified in "Section 02070 - Selective Demolition."

B. Verify that structure will support the weight of the system, including ballast, and the weight of the water, when testing membrane for leaks.

C. Examine rough-in for roof drainage system to verify actual locations of drains and piping prior to installation.

3.2 PREPARATION OF SUBSTRATE

A. General: Comply with manufacturers' instructions for preparation of substrate to receive membrane roofing.

B. Immediately before placement of roofing, ensure removal of projections and other conditions which could be detrimental to the performance of the in-place roofing membrane system. Clean deck of loose material. Do not proceed with the work until unsatisfactory conditions have been corrected.

C. Pre-Installation Meeting: Prior to installation of roofing, but following acceptance of required submittal, meet at the Project site to review the material selections, installation procedures and coordination of the Work with other trades. Meeting shall include the Architect, Construction Manager, Contractor, Subcontractor, Manufacturer's representatives, and any other subcontractors whose work requires coordination with this Work.

D. Fill voids, seal joints, and apply accessory materials as recommended by roofing system manufacturer.

E. Apply primer to properly prepared substrates at rate recommended by membrane manufacturer. Prime only area which will be covered by roofing membrane in same working day; reprime areas not covered by roofing membrane within 24 hours.

1. If areas of existing roof removals are not going to be immediately roofed over, prime exposed concrete roof deck and similar roofing substrates with the urethane based primer to provide a watertight assembly and prevent water infiltration into the building. Comply wuith the roofing system manufacturers recommendations.

F. Install reinforcing, flashings, and accessory items as shown, and as recommended by manufacturer even though not shown.

G. Prevent compounds from entering drains and conductors, and from spilling or migrating onto surfaces of other work.

1. Mask off adjoining surfaces not to receive membrane to effectively prevent spillage of system components outside of direct application areas.

3.3 INSULATION INSTALLATION (NEW ROOF APPLICATIONS ONLY)

A. Install according to manufacturer's written instructions and as indicated. Coordinate placement and securement of the roof insulation with other work closely related to this installation.

B. Comply with manufacturer's written instructions for securing insulation to metal deck. Treat seams between insulation boards in accordance with the roofing manufacturers recommendations.

C. Extend insulation full thickness over entire surface to be insulated, as indicated on drawings, cutting and fitting tightly around obstructions. Provide for proper drainage of membrane.

D. Tightly butt insulation boards together with end joints staggered from adjacent rows. Cut and fit tightly about projections and penetrations.

3.4 MEMBRANE INSTALLATION

A. General: Comply with manufacturers' instructions, except where more stringent requirements are indicated.

B. Coordinate installation of roofing materials and associated work to provide complete roofing system complying with recommendations of manufacturers and installers involved in work. Minimize period of exposure of roofing materials.

C. Membrane Application, General: Prepare the fluid applied roofing materials and system components as recommended by the manufacturer. Take the necessary precautions required to properly place system components.

1. Mix only enough materials that can be placed within the manufacturer's recommended pot-life. Do not re-temper or place materials exceeding these requirements.

2. Mix multi-component materials in the proper proportions, and with the proper agitators and similar mixing devices. Thoroughly blend the components to assure a consistent polyester matrix.

3. Proceed with the roof installation after preparations are complete, unless otherwise directed by the manufacturer.

4. Install flashing assemblies and integral joint covers where indicated and as recommended by system manufacturer. Extend flashings onto perpendicular surfaces and other work penetrating substrate to not less than 6 inches beyond top surface of finished membrane.

3.5 MEMBRANE ROOFING REPAIRS

A. Roofing Repairs

1. Clean the new-to-existing splices with acetone or similar clear/primer recommended by the manufacturer.

2. Apply the urethane primer over exposed concrete roof deck, and up the curb or other vertical penetrations of the proposed additions.

3. Primer shall be distributed evenly and continuously with recommended rollers, resulting in a monolithic application of the primer.

4. Into the freshly applied primer (while still wet), bed a continuous layer of the specified reinforcing fleece, with all edges and seams lapped in accordance with the manufacturer's recommendations, but not less than 2" in any direction.

5. The fleece material shall be installed wrinkle free, and shall be 100 percent wet/wicked into the primer.

6. Immediately after the fleece has wicked into the primer, apply the multi-component polyester resin matrix to the

fleece. Apply at the rate recommended by the manufacturer.

7. Broadcast specified aggregate into freshly placed system.

8. Remove excess aggregate and similar debris resulting from the roofing repairs and other installations.

3.6 MEMBRANE ROOFING, NEW APPLICATIONS

A. New Roofing Installation

1. Remove debris from metal deck substrates. Install roof insulation, and properly prepare/treat seams between boards, as specified.

2. Apply the urethane primer over properly installed roof insulation.

3. Primer shall be distributed evenly and continuously with recommended rollers, resulting in a monolithic application of the primer.

4. Into the freshly applied primer (while still wet), bed a continuous layer of the specified reinforcing fleece, with all edges and seams lapped in accordance with the manufacturer's recommendations, but not less than 2" in any direction.

5. The fleece material shall be installed wrinkle free, and shall be 100 percent wet/wicked into the primer.

6. Immediately after the fleece has wicked into the primer, apply the multi-component polyester resin matrix to the fleece. Apply at the rate recommended by the manufacturer.

7. Broadcast specified aggregate into freshly placed system.

8. Remove excess aggregate, roof insulation, reinforcing fleece and similar scraps resulting from the installation.

3.7 WATER TEST

A. In-Place Testing: Test for leaks with 2" depth of water maintained for 48 hours. Repair any leaks revealed by examination of substructure, and repeat test until no leakage is observed.

   1. Methods for testing shall be thoroughly reviewed, and safeguards implemented, before testing.

3.8 FINAL INSPECTION

A. Final Inspection: After roofing systems work is completed, an inspection shall be made by the roofing systems manufacturer's representative. He shall certify that the roofing systems have been installed according to the specifications.

END OF SECTION

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide flashing and sheet metal in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Metal base and counter flashing.

2. Exposed metal closures and trims.

B. Related Sections

1. Section 07410 - Metal Wall Panels.
2. Section 10200 - Louvers.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

B. Samples: Submit 8" square samples of specified sheet materials. Submit 12" long samples of shop-fabricated products by full profile. Provide complete with specified factory finish.

C. Shop Drawings: Submit shop drawings showing layout, joining, profiles, and anchorages of fabricated work, including base and counter-flashings, and trim units; layouts at 1/4" scale, details at full scale showing adjacent materials.

1.3 JOB CONDITIONS

A. Coordinate work of this section with adjoining work. Ensure best possible weather resistance and durability and protection of work.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage on installer and craftsmen who have successfully completed three (3) flashing and sheet metal projects similar in scope, materials and design to this project within the last five (5) years, with a minimum of two completed seasonal cycles.

PART 2 - PRODUCTS

2.1 FLASHING AND SHEET METAL MATERIALS

A. Stainless Steel: AISI Type 302/304, ASTM A 167, 2D annealed finish, soft except where harder temper is required for forming or performance; 0.015" thick (28 gage) except as otherwise indicated.

1. Counter flashing, unless otherwise indicated, provide two piece, cap and receiver, in stainless steel minimum 25 gage.

B. Sheet Aluminum: ASTM B 209, alloy 3003, temper H14; 0.032-inch thick (20 gage) except as otherwise indicated.

1. Provide aluminum flashings and trims of the finish to match the louver assemblies specified in "Section 10200 - Louvers."

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Solder: For use with stainless steel, provide 60 - 40 tin/lead solder (ASTM B 32), with acid-chloride type flux, except use rosin flux over tinned surfaces.

B. Fasteners: Same metal as flashing/sheet metal or, other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

C. Bituminous Coating: SSPC - Paint 12, asphalt mastic, nominally free of sulfur, compounded for 15- mil dry film thickness per coat.

D. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant.

E. Elastomeric Sealant: Type recommended by manufacturer of metal and fabricator of components being sealed; comply with ASTM C 920.

F. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for non-moving joints.

G. Adhesives: Type recommended by flashing manufacturer for waterproof seaming and adhesive application of flashing sheet.

H. Paper Slip Sheet: 5-lb rosin-sized building paper.

I. Reglets: Metal or plastic units of type and profile indicated, compatible with flashing indicated, non-corrosive.

J. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.

K. Elastic Flashing Filler: Closed-cell polyethylene or other soft closed-cell material recommended by elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress.

L. Roofing Cement: ASTM D 4586, asphaltic.

2.4 FABRICATED UNITS

A. General: Comply with SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate with expansion provisions and to prevent leakage, damage or deterioration. Form work to fit substrates, flat and without defects, true to line and levels indicated, with exposed edges folded back to form hems.

B. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

C. Expansion Provisions: Where joints would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with concealed mastic sealant.

D. Sealant Joints: Where movable, non-expansion type joints are indicated or required, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

E. Separations: Separate metal from noncompatible metal or corrosive substrates with bituminous coating or other permanent separation.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

A. General: Comply with manufacturer's installation instructions and with SMACNA "Architectural Sheet Metal Manual". Anchor work securely, with allowance for thermal expansion. Conceal fasteners where possible, and set units true to line and level. Install work with laps, joints and seams which will be permanently watertight and weatherproof.

B. Underlayment: Where flashing metal would contact cement or wood, install red rosin paper and polyethylene underlayment.

C. Bed flanges of work to thick coat of bituminous roofing cement where required for waterproof performance.

D. Install reglets to receive counterflashing in manner indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 4 sections.

E. Install counterflashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.

F. Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6". Fabricate seams at joints between units with minimum 3" overlap, to form a continuous waterproof system.

3.2 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.

B. Protection: Protect flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of Substantial Completion.

END OF SECTION

SECTION 07900 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide joint sealants in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Interior and exterior joints in vertical surfaces.

2. Interior and exterior in horizontal surfaces.

3. Primers, bond breakers, air blocks, backer rods and other accessory materials for interior and exterior joints.

B. Related Sections

1. Section 04200 - Unit Masonry.
2. Section 07600 - Flashing and Sheet Metal.
3. Section 07270 - Firestopping.
4. Section 07410 - Metal Wall Panels.
5. Section 07510 - Membrane Roofing and Repairs.
6. Section 08110 - Steel Doors and Frames.
7. Section 08450 - Interior Metal and Glass Partitions.
8. Section 08800 - Glass and Glazing.
9. Section 09250 - Gypsum Drywall Assemblies.
10. Section 09300 - Tile.
11. Section 09600 - Interior Stonework.
12. Section 10800 - Toilet and Bath Accessories.

1.2 DEFINITIONS

A. Joint: The reference to the term "joint" as indicated on the Contract Documents shall be defined as the space between similar and dissimilar building components, systems and similar construction elements; joints shall include, but not be limited to the connection points of materials to form and unite surfaces. Joints may be structural, acoustical or required to meet other performances specified.

1. The term joint shall include surface preparation, priming/conditioning, accessory materials, sealants, and tooling of the specified materials resulting in a completed system.

1.3 SYSTEM PERFORMANCES

A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

B. Sealants used as weather seals shall not experience adhesive or cohesive failure. Sealants shall withstand movements up to the limits prescribed by the manufacturer. Exposed sealant surface shall not crack or bubble. Sealants and primers shall not stain adjacent materials. Sealants shall not be adhered to, or placed against, the edge of a laminated glass unit interlayer.

1.4 QUALITY ASSURANCE

A. Special Experience Requirements: Engage an experienced Installer who has completed (2) two joint sealant applications similar in scope, material and design to this Project, within the last (5) five years.

B. Source for Materials: Obtain joint sealer materials from a single manufacturer for each different product.

C. Preconstruction Field Tests: Prior to installation of joint sealants, field-test adhesion to joint substrates as recommended in ASTM C 962.

1. Joint substrates tested shall be same finish as that of materials and finishes specified.

D. Periodically test sealants in place for adhesion, using methods recommended by sealant manufacturer. Promptly replace any sealant which does not adhere or fails to cure.

E. Sealant manufacturers shall review shop drawings to verify acceptability of sealant application with proper testing for adhesion and compatibility.

F. Mockups: Before installing each different joint sealant, apply elastomeric sealants as follows to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution:

1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each product required, including instructions for preparation and application.

B. Samples: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available.

C. Test Reports: Submit joint sealer-substrate test results to verify compatibility of proposed joint sealers with substrates. Manufacturer shall conduct tests and provide reports confirming sealant adhesion, compatibility and absence of staining for all relevant substrates.

1. Test reports shall reflect results of identical substrates and finishes as that of the proposed work.

D. Certificates: Submit certificates from manufacturers that their products comply with specifications and are suitable for the use indicated.

1. Submit New York City MEA and BS & A numbers for joint sealers required at fire rated locations.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original unopened containers with labels indicating manufacturer, expiration date, and other pertinent data.

B. Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not install joint sealers when air and surface temperatures are outside the limits permitted by joint sealer manufacturer, or when joint substrates are wet or dirty.

B. Joint Widths: Do not proceed with installation of joint sealers when joint widths are less than allowed by joint sealer manufacturer.

1.8 EXTENDED WARRANTY

A. Submit a written warranty agreeing to repair or replace defective joint sealer materials or workmanship; including staining, loss of adhesion, loss of cohesion, cracking or discoloration, for a period of 5 years from the date of Substantial Completion.

B. The warranty should include a provision that the period of such warranty shall commence with the Owners final acceptance of all work covered under the Contract or at such other date or dates as the Owner may specify in writing prior to that time.

C. The following types of failure will be adjudged as defective work:

1. Abnormal deterioration, aging or weathering of the work.

2. Water leakage under conditions equivalent to, or less severe than, those specified.

3. Air leakage exceeding specified limits.

4. Sealant loss of adhesion, loss of cohesion, cracking or discoloration.

5. Staining of sealed substrates by sealant or primer.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealers, joint fillers and related materials that are compatible with one another and with joint substrates, as demonstrated by testing and field experience.

B. Colors: Provide colors of joint sealers as selected by the Architect.

C. Stain-Test-Response Characteristics: Where elastomeric sealants are specified, they are to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

2.2 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Comply with ASTM C 920.

B. Two-Part Non-Sag Urethane Sealant: Type M; Grade NS; Class 25, unless otherwise indicated; non-leaching, non-staining.

1. Uses: Non-traffic (NT), masonry (M), and other joint substrates indicated (O); and complying with the following requirements for additional joint movement capability:

2. Additional capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the following percentage changes in joint width as measured at time of application and remain in compliance with other requirements of ASTM C 920 for uses.

C. One-Part Mildew-Resistant Silicone Sealant: Type S; Grade NS; Class 25:

1. Interior Uses: Non-traffic (NT), glass (G), aluminum (A) and nonporous joint substrates indicated; formulated with fungicide for sealing interior joints with nonporous substrates at plumbing fixtures.

E. Products: Subject to compliance with requirements, provide one of the following:

1. Two-Part Urethane Sealant

"Dymeric"; Tremco.
"Dynatrol II"; Pecora.
"Sikaflex - 2c NS"; Sika.
"Chem-Calk 500"; Bostik.

2. One-Part Mildew-Resistant Silicone Sealant

"Dow Corning 786"; Dow Corning Corp.
"SCS 1702"; General Electric Co.
"863 #345 White"; Pecora Corp.
"Proglaze White"; Tremco Corp.

2.3 LATEX JOINT SEALANTS

A. Acrylic-Emulsion Sealant: One part, nonsag sealant complying with ASTM C 834, paintable and recommended for interior applications with joint movement of not more than plus or minus 5 percent.

B. Products: Subject to compliance with requirements, provide one of the following:

1. Acrylic-Emulsion Sealant

a. "Chem-Calk 600"; Bostik Construction Products Div.
b. "AC-20"; Pecora Corp.
c. "Tremco Acrylic Latex 834"; Tremco Inc.

2.4 MISCELLANEOUS JOINT SEALANTS

A. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

B. Butyl-Polyisobutylene Sealant: Manufacturer's standard, solvent- release-curing, butyl-polyisobutylene sealant complying with AAMA 809.1, recommended for concealed joints.

C. Butyl-Polyisobutylene Tape Sealant: Manufacturer's standard, solvent-free, butyl-polyisobutylene tape sealant with a solids content of 100%; complying with AAMA 804.1; nonstaining, paintable, and non-migrating; packaged on rolls with a release paper on one side; with reinforcement thread to prevent stretch.

D. Products: Subject to compliance with requirements, provide one of the following:

1. Acoustical Sealants for Concealed Joints

"BA-98"; Pecora Corp.
"Tremco Acoustical Sealant"; Tremco Inc.

2. Butyl-Polyisobutylene Sealant

"PTI 404"; Protective Treatment, Inc.

3. Butyl-Polyisobutylene Tape Sealant

"Extru-Seal Tape"; Pecora Corp.
"PTI 606"; Protective Treatments, Inc.
"Tremco 440 Tape"; Tremco Inc.

2.5 JOINT SEALANT BACKING

A. General: Provide backings which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer.

B. Plastic Foam Joint-Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and completely fill indicated joint widths without failure.

1. Either flexible, open cell polyurethane foam or non-gassing, closed-cell polyethylene foam, unless otherwise indicated or as recommended by the sealant manufacturer.

C. Tubing Joint-Fillers: Neoprene, EPDM or silicone tubing complying with ASTM D 1056, non-absorbent to water and gas, resilient at temperatures down to -26 deg F., of size and shape to provide a secondary seal.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape to prevent bond between sealant and materials at back of joint. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Provide type recommended by joint sealer manufacturer; required for adhesion of sealant to joint substrates, as determined from preconstruction joint sealer-substrate and field tests.

B. Cleaners: Provide non-staining cleaner of type acceptable to manufacturer of sealant and sealant backing materials.

C. Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and to surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect joints to receive joint sealers for compliance with requirements. Report conditions detrimental to joint sealer work. Proceed after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), oil, grease, water, dirt, and other contaminants.

2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

3. Remove laitance and form-release agents from concrete.

4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond; not on adjoining surfaces.

C. Masking Tape: Mask adjoining surfaces which might be stained or damaged by sealant or by cleaning required to remove sealant. Remove tape immediately after tooling without disturbing joint.

3.3 INSTALLATION OF JOINT SEALERS

A. General: Comply with joint sealer manufacturers' printed installation instructions, except where more stringent requirements apply.

B. Elastomeric Sealant Installation Standard: Comply with ASTM C 962 for use of joint sealants as applicable to conditions indicated.

C. Latex Sealant Installation Standard: Comply with ASTM C 790 for use of latex sealants.

D. Acoustical Sealant Application Standard: Comply with ASTM C 919 for use of joint sealants in acoustical applications.

E. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Do not use absorbent joint-filler materials.
4. Install bond breaker tape where required to prevent third-side adhesion of sealant to back of joint.

F. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting joint substrates, completely filling joints and providing uniform, cross-sectional shapes and depths for optimum sealant movement. Mask adjacent surfaces if necessary to protect them from sealants.

B. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealants from surfaces adjacent to joint.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion.

1. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

END OF SECTION

Office of Emergency Management

SWANKE HAYDEN CONNELL AR ECTS

7 World Trade Center
New York, New York 10048
SHCA Project No. 5576A

April 6, 1998

Door Schedule

Floor	Door Tag	Jamb Opening Width	Jamb Opening Height	Frame Data Jamb	Frame Data Head	Frame Data Material	Door Data Type	Door Data Material	Door Data Sill	Door Data Thk.	UL Rating Label (Hrs)	Hardware Set	Remarks
23RD.	1A	3'-0"	8'-0"	Door & frame by Insulguard model # 544 custom ht.								17	W/ CARD READER/ BULLET RESISTANT LEVEL 3. DOOR & FRAME BY INSULGARD #544 CUSTOM HT.
	1B	3'-0"	8'-0"	Door , frame and sidelite by Insulgard model #'s ICDS full lite and ICFW/1-3 side lite (custom)								7	W/ CARD READER/ BULLET RESISTANT LEVEL 3
	2A	3'-6"	8'-4"	J2	H2	HM	A	HM		1 3/4		3	W/CARD READER
	2B	3'-6"	8'-4"	J2	H2	HM	A	HM		1 3/4"		3	W/CARD READER
	2C	2'-10"	8'-0"	EE ELEV	EE ELEV	MTL						1	BY ACME
	2D	(2) 2'-101/2"	8'-0'	EE ELEV	EE ELEV	MTL							BY ACME
	3	3'-0'	8'-0'	J5	H5	WD	A	WD		2 1/4		5	W/LIGHT SEALS /W DOOR CONTACT
	4	3'-0'	8'-0'	Door & frame by Insulguard model # 544 custom ht. wit wood veneer to match millwork								18	W/CARD READER/ BULLET RESISTANT LEVEL 3 / EMI SHIELD
	5	(2) 3'-0'	8'-0'									6	W/CARD READER/ BULLET RESISTANT LEVEL 3
	6	3'-0'	8'-0'	J6	H6	WD	A	WD		2 1/4		13A	
	7A	3'-0'	8'-0'	Door & frame by Insulguard model # 544 custom ht. with EMI shielding and wood veneer to match millwo								18	BULLET RESISTANT LEVEL 3 & EMI SHIELD
	7B	3'-0'	8'-0'	Door & frame by Insulguard model # 544 custom ht with EMI shielding and wood veneer to match millwo								18	BULLET RESISTANTLEVEL 3 & EMI SHIELD
	8	3'-0'	8'-0'	J6	H6	WD	A	WD	A	2 1/4		11	1" UNDERCUT

Office of Emergency Management

SWANKE HAYDEN CONNELL ARCHITECTS

7 World Trade Center

New York, New York 10048

April 6, 1998

SHCA Project No. 5576A

Door Schedule

Floor	Door Tag	Jamb Opening		Frame Data			Door Data				UL Rating	Hardware	Remarks
		Width	Height	Jamb	Head	Material	Type	Material	Sill	Thk.	Label (Hrs)	Set	
	8A	2'-0"	8'-0"	J9	H9		I	WD		2 1/4		4	
	9	3'-0'	8'-0'	J5	H5	WD	A	WD		2 1/4		3A	W/CARD READER
	10	3'-0'	8'-0'	Sound proof door and frame assembly RF (50db) with EMI shielding and wood veneer to math millwork by								3A	W/CARD READER/SOUND PROOF & EMI SHIELD
	11A	3'-0'	8'-0'	J5	H5	WD	A	WD		2 1/4		13A	
	11B	3'-0'	8'-0'	J5	H5	WD	A	WD		2 1/4		13A	
	12	3'-0'	8'-0'	J6	H6	WD	A	WD	A	2 1/4		11	1" UNDERCUT
	12A	(2) 1'-8'	8'-0"	J9	H9		H	WD		2 1/4		4	
	13	(2) 3'-0'	8'-0'	Door & frame by insulguard model # ICDS full lite custom ht.								6	W/CARD READER/ BULLET RESISTANT LEVEL 3
	14	3'-0'	8'-0'	J5	H5	WD	A	WD		2 1/4		3A	
	15A	3'-0'	8'-0'	J5	H5	WD	A	WD		2 1/4		3A	W/CARD READER
	15B	(2) 2'-3"	8'-0"	D/A-10	J/A-10	WD	C	WD		21/4"		14	
	16	3'-0'	8'-0'	GSA Class 5 security vaul door by Overly model # 1883 gc to confirm swing									SAFE DOOR W/ DOOR CONTACTS
	17	3'-0'	8'-0'	J5	H5	WD	A	WD		2 1/4		3A	W/CARD READER

Door Schedule

Floor	Door Tag	Jamb Opening Width	Jamb Opening Height	Frame Data Jamb	Frame Data Head	Frame Data Material	Door Data Type	Door Data Material	Door Data Sill	Door Data Thk.	UL Rating Label (Hrs)	Hardware Set	Remarks
	18	3'-0'	8'-0'	J3	H3	HM	A	HM		1 3/4		5	W/DOOR CONTACT
	19	3'-0'	8'-0'	7/A-4	1A/A-4	MTL	D	MTL				1	BY ACME
	20	3'-0'	8'-0'	J4	H4	HM	E	HM		1 3/4		5A	W/ DOOR CONTACT
	21A	3'-0'	8'-0'	J4	H4	HM	E	HM		1 3/4		13	
	21B	3'-0'	8'-0'	J4	H4	HM	E	HM		1 3/4		13	
	21C	3'-0'	8'-0'	Door & frame by insulguard model # ICDS full lite custom ht.								7	W/CARD READER
	22	3'-0'	8'-0'	J4	H4	HM	A	HM		1 3/4		5A	
	23	4'-0"	8'-0'	J4	H4	HM	A	HM		1 3/4		3	W/CARD READER
	24	3'-0'	8'-0'	J4	H4	HM	A	HM		1 3/4		5A	W/ DOOR CONTACT
	25	3'-0'	8'-0'	J4	H4	HM	A	HM		1 3/4		5A	
	26	3'-0'	8'-0'	7/A-4	1A/A-4	MTL	D	HM		1 3/4		1	BY ACME
	27	3'-0'	8'-0'	7/A-4	1A/A-4	MTL	D	HM		1 3/4		1	BY ACME
	28	3'-0'	8'-0'	J4	H4	HM	A	HM		1 3/4		5A	

Office of Emergency Management

SWANKE HAYDEN CONNELL ARCHITECTS

7 World Trade Center
New York, New York 10048
SHCA Project No. 5576A

April 6, 1998

Door Schedule

Floor	Door Tag	Jamb Opening Width	Jamb Opening Height	Frame Data Jamb	Frame Data Head	Frame Data Material	Door Data Type	Door Data Material	Door Data Sill	Door Data Thk.	UL Rating Label (Hrs)	Hardware Set	Remarks
	29	3'-0"	8'-0"			HM	A	HM		1 3/4			
	30	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		13	
	31	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		10	1" UNDECUT
	32	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		10	1' UNDERCUT
	33	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		13	
	34	3'-0"	8'-0"	7/A-4	1A/A-4	MTL	D	MTL		1 3/4		1	BY ACME
	35	4'-0"	8'-0"	J1	H1	HM	E	HM		1 3/4		3	W / DOOR CONTACT
	36	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		1	
	37	3'-0"	8'-0"	7/A-4	1A/A-4	MTL	D	HM		1 3/4		1	
	38	(2) 3'-0"	8'-0"	7/A-4	1A/A-4	MTL	F	MTL				9	
	40A	3'-0"	8'-0"	Door & frame by Insulguard model # ICDS full lite custom ht.								7	W / DOOR CONTACT / BULLET RESISTANT LEVEL 3 W READER INTERFACE
	40B	3'-0"	8'-0"	Door & frame by Insulguard model # ICDS full lite custom ht								7	W/CARD READER/ BULLET RESISTANT LEVEL 3
	40C	3'-0"	8'-0"	J9	H9		A	WD		2 1/4		14	

Door Schedule

Floor	Door Tag	Jamb Opening		Frame Data			Door Data				UL Rating	Hardware	Remarks
		Width	Height	Jamb	Head	Material	Type	Material	Sill	Thk.	Label (Hrs)	Set	
	41A	(2) 2'-6"	8'-0"	J10	H10	WD	C	WD		2 1/4		4	
	41B	(2) 2'-6"	8'-0"	J10	H10	WD	C	WD		2 1/4		4	
	41C	(2) 2'-6"	8'-0"	J10	H10	WD	C	WD		2 1/4		4	
	41D	(2) 2'-6"	8'-0"	J10	H10	WD	C	WD		2 1/4		4	
	41E	(2) 2'-6"	8'-0"	J10	H10	WD	C	WD		2 1/4		4	
	42A	3'-0"	8'-0"	J10	H10	HM	A	HM		1 3/4		12	
	42B	(2) 2'-6"	8'-0"	J10	H10		C	WD		2 1/4"		4	
	42C	(2) 2'-6"	8'-0"	J10	H10		C	WD		2 1/4"		4	
	43	(2) 3'-0"	8'-0"	J2	H2	HM	C	HM	H-11/D-0	1 3/4	2 HR.	16	MECHANICAL ROOM / W DOOR CONTACTS W/ ASTRIGAL & SOUND SEAL
	44	3'-0"	8'-0"	J1	H1	HM	E	HM/GL		1 3/4		12	
	44A	3'-0"	8'-0"	J1	H1	HM	A	HM		1 3/4		3	W/CARD READER
	45	3'-0"	8'-0"	J4	H4	HM	E	HM/G,		1 3/4		12	
	46	3'-0"	8'-0"	J1	H1	HM	E	HM/GL		1 3/4		12	

Office of Emergency Management

SWANKE HAYDEN CONNELL ARCHITECTS

7 World Trade Center
New York, New York 10048
SHCA Project No. 5576A

April 6, 1998

Door Schedule

Floor	Door Tag	Jamb Opening Width	Jamb Opening Height	Frame Data Jamb	Frame Data Head	Frame Data Material	Door Data Type	Door Data Material	Door Data Sill	Door Data Thk.	UL Rating Label (Hrs)	Hardware Set	Remarks
	47	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		5A	
	48A	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		10	1" UNDERCUT
	48B	3'-0"	8'-0"	J4	H4	HM	E	HM		1 3/4		3	W/CARD READER
	49	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		5A	
	50	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		5A	
	51	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		1	
	52	3'-0"	8'-0"	J2	H2	HM	A	HM		1 3/4		3	W/CARD READER
	53A	3'-0"	8'-0"	J2	H2	HM	E	HM/GL		1 3/4		12	
	53B	3'-0"	8'-0"	J2	H2	HM	E	HM/GL		1 3/4		12	
	54A	(2) 3'-0"	8'-0"	J4	H4	HM	C	HM		1 3/4		8	W/CARD READER
	54B	(2) 3'-0"	8'-0"	J4	H4	HM	C	HM		1 3/4		8	W/CARD READER
	55	3'-0"	8'-0"	J1	H1	HM	A	HM		1 3/4		5A	W / DOOR CONTACT
	56	3'-0"	8'-0"	J4	H4	HM	A	HM		1 3/4		13	1" UNDERCUT

Door Schedule

Floor	Door Tag	Jamb Opening Width	Jamb Opening Height	Frame Data Jamb	Frame Data Head	Frame Data Material	Door Data Type	Door Data Material	Door Data Sill	Door Data Thk.	UL Rating Label (Hrs)	Hardware Set	Remarks
	57	EXIST.	EXIST.									15	W/ DOOR CONTACT
	58	EXIST.	EXIST.									15	W/ DOOR CONTACT
	59A	EXIST.	EXIST.									15	
	59B	EXIST.	EXIST.									15	
	60	EXIST.	EXIST.									15	
	61	EXIST.	EXIST.									15	W/DOOR CONTACT
	62	EXIST.	EXIST.									15	W/ DOOR CONTACT
	63	EXIST.	EXIST.									15	W/ DOOR CONTACT
	64	EXIST.	EXIST.									15	W/ DOOR CONTACT
	65A	EXIST.	EXIST.									15	
	65B	EXIST.	EXIST.									15	
	66A	EXIST.	EXIST.									15	
	66B	EXIST.	EXIST.									15	

Door Schedule

Floor	Door Tag	Jamb Opening Width	Jamb Opening Height	Frame Data Jamb	Frame Data Head	Frame Data Material	Door Data Type	Door Data Material	Door Data Sill	Door Data Thk.	UL Rating Label (Hrs)	Hardware Set	Remarks
	67	EXIST.	EXIST.									15	W/ DOOR CONTACT
	68	EXIST.	EXIST.									15	W/ DOOR CONTACT
	69	EXIST.	EXIST.									15	W/ DOOR CONTACT
	70	EXIST.	EXIST.									15	W/ DOOR CONTACT
	71	EXIST.	EXIST.									15	W/ DOOR CONTACT
	72A	EXIST.	EXIST.									15	
	72B	EXIST.	EXIST.									15	
	73	EXIST.	EXIST.									15	W/ DOOR CONTACT
	74	EXIST.	EXIST.									15	W/ DOOR CONTACT
	75	EXIST.	EXIST.									15	W/ DOOR CONTACT
	76	EXIST.	EXIST.									15	W/DOOR CONTACT
	77	EXIST.	EXIST.									15	
	78	EXIST.	EXIST.									15	W/DOOR CONTACT

Door Schedule

Floor	Door Tag	Jamb Opening Width	Jamb Opening Height	Frame Data Jamb	Frame Data Head	Frame Data Material	Door Data Type	Door Data Material	Door Data Sill	Door Data Thk.	UL Rating Label (Hrs)	Hardware Set	Remarks
7TH	1	(2) 3'-0"	8'-0"	J-11/D-0	H-11/D-0	HM	A	HM	H-11/D-0	13/4"	2HR.	16	W/ DOOR CONTACT W/ ASTRIGAL AND SOUND SEAL
	2	(2) 3'-0"	8'-0"	J-11/D-0	H-11/D-0	HM	A	HM	H-11/D-0	13/4"	2HR.	16	W/ DOOR CONTACT W/ ASTRIGAL AND SOUND SEALS
48TH.	1	3'-0"	8'-0"	8/D-12	3/D-12	ALUM	A	ALUM	8/D-12	13/4"		5	W/ DOOR CONTACT W/SADDLE AND WEATHER SEALS

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide steel doors and frames in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Interior steel doors, as indicated.

2. Interior steel door frames, as indicated.

3. Interior steel frames for glazed openings, as indicated.

4. Acoustical doors, frames and gasketry, as indicated.

5. Ballistic resistant steel doors, windows and frames.

B. Related Sections

1. Section 08210 - Wood Doors.
2. Section 08710 - Door Hardware.
3. Section 09250 - Gypsum Board Assemblies.
4. Section 08800 - Glass and Glazing.

1.2 QUALITY ASSURANCE

A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100), and as herein specified.

B. Fire-Rated Door Assemblies: Where indicated, provide fire-rated doors and frames that comply with the Board of Standards and Appeals of the City of New York, and that have been tested and labeled accordingly.

C. Acoustical Door Assemblies: Where acoustical ratings are identified in the door schedule, it shall be the manufacturer's sole responsibility to provide a door, door frame, and all associated sound seals and gasketry capable of achieving the specified Sound Transmission Class (STC) rating in a fully installed condition.

1. Submit laboratory test data in accordance with ASTM E 90 substantiating that the construction meets the specification requirements.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data to show that products comply with requirements.

1. Laboratory test results indicating compliance with the specified acoustical performances.

B. Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door types, conditions at openings, details of construction, location and installation requirements of finish hardware, reinforcements and security devices, and details of joints and connections. Show anchorage and accessories.

1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.

2. Coordinate glazing frames and stops with glazing requirements.

C. Samples: 2 samples, 6" square of each finish, color and texture selected by Architect for factory finished doors and frames. Include the following:

1. Sample door section showing edge, top and bottom construction, insulation, hinge reinforcement and face stiffening.

2. Corner section of typical welded frame showing welded corner joint, welded hinge reinforcement, dust cover box, floor anchor and shop finish.

3. Corner section of each type of acoustically rated door and frame assembly showing corner construction, reinforcements, insulations, sound seals and similar gaskets, floor anchor and shop finish.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.

B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal to new work and acceptable to Architect; otherwise, remove and replace damaged items.

C. Store doors and frames to protect them from dirt, damage and moisture. Remove wet cartons immediately. Provide 1/4" spaces between stacked doors for air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, provide steel doors and frames as manufactured by one of the following or approved equal.

1. Acme Steel Doors Corp.
2. Insulgard Corporation.

2.2 MATERIALS

A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569.

B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366.

C. Galvanized Steel Sheets: Zinc-coated steel sheets of commercial quality, complying with ASTM A 526, with ASTM A 525, G60 zinc coating, mill phosphatized.

D. Supports and Anchors: Not less than 18 gage galvanized sheet steel.

E. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.

F. Shop Applied Primer: Rust-inhibitive enamel or paint, suitable as a base for specified finish paints. Provide zinc-rich primer complying with SSPC Paint 20 for touching up galvanized coatings.

G. Glass: Refer to "Section 08800 - Glass and Glazing," of these specifications.

2.3 FABRICATION, GENERAL

A. Shop fabricate steel doors and frames to be rigid, neat in appearance and free from defects, warp or buckle. Clearly identify work that cannot be factory assembled, to assure proper assembly at project.

B. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel.

C. Fabricate interior doors, panels, and frames directly adjacent to shower rooms and other wet locations from galvanized sheet steel. Close top and bottom edges of doors as integral part of door construction utilizing flush end closures, 18 gage minimum.

1. Inverted steel channel type closure is not permitted.

D. Exposed Fasteners: Where indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

E. Sound-Rated (Acoustical) Assemblies: Where shown or scheduled, provide door and frame assemblies which have been fabricated for sound rating of STC 50 or better, to comply with New York City Building Code.

F. Finish Hardware Preparations: Prepare doors and frames for finish hardware in accordance with final Finish Hardware Schedule and templates, and security devices. Comply with applicable requirements of ANSI A 115, ANSI A 117 and A 156 series specifications for door and frame preparation for hardware.

1. For concealed overhead door closers, provide space, cutouts, reinforcing and provisions for fastening, in top rail of doors or head of frames, as applicable.

2. For concealed floor pivots, provide space for fastening and installing housings, wiring and other components.

G. Reinforce doors and frames to receive hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

H. Locate finish hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for Builder's Hardware," published by Door and Hardware Institute.

2.3 STEEL DOORS AND WINDOWS

A. Provide steel doors of types and styles indicated on drawings or schedules. Comply with SDI-100 requirements as follows:

1. *Interior Doors: SDI-100, Grade II, heavy-duty, Model 2 seamless, minimum 16-gage faces, unless otherwise indicated.*

   a. Selected Product: Provide hollow metal steel doors, acceptable to the Architect, for installation in the metal and glass partition system as manufactured by Acme Steel Door Corp., unless otherwise indicated.

2. Interior Doors in Wet Locations: SDI-100, Grade II, heavy-duty, Model 2 & 2A seamless, minimum 16-gage faces, galvanized steel, unless otherwise indicated.

3. Interior Ballistic Resistant Assemblies Provide the manufacturer's standard ballistic resistant assemblies constructed of fully welded 11 gage ballistic resistant steel faces welded to 14 gage steel interior (concealed) lock and hinge rails, vertical reinforcing and top and bottom closures, unless otherwise indicated.

   a. Selected Product: Provide ballistic resistant, flush type hollow metal doors "#HM544 - Bullet Resistant Door System" as manufactured by Insulguard Corporation.

b. Selected Product: Provide ballistic resistant, full glass lite type hollow metal doors "#ICDS" as manufactured by Insulguard Corporation.

c. Selected Product: Provide ballistic resistant glazed window assemblies (interior) "#ICFW-1-8" as manufactured by Insulguard Corporation.

B. Fabricate exposed faces of doors and panels from only cold-rolled steel.

C. Glazing Beads: 19 gauge channel sections with mitered corner joints, secured to framed opening with zinc-coated countersunk Phillips oval head self-tapping machine screws.

2.4 STEEL FRAMES

A. Provide steel frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules.

1. Interior Welded Door Frames, at Wet Locations: Minimum 14-gage hot dipped galvanized steel with mitered and welded corners.

2. Interior Welded Frames: Minimum 16-gage cold rolled steel with mitered and welded corners, unless otherwise noted.

3. Interior Ballistic Resistant Door Frames: Minimum 11-gage cold rolled ballistic steel afrmes of the profiles required to suit the surrounding construction; and acceptable to the Architect. Frames shall have fully mitered and welded corners.

4. Provide frames with not less than 3 wall anchors and 1 floor anchor per jamb. For frames 7'-6" to 8'-0" height, provide 4 wall anchors per jamb; for frames over 8'-0", add 1 wall anchor per jamb for each additional 2'-0" or less in height.

5. Provide temporary spreaders on bottom of welded door frames.

B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.

C. Mortar Guards: Provide 26 gage steel boxes, welded to frame, at back of finish hardware and security device cutouts where mortar or other materials might obstruct hardware operation and to close off openings.

D. Coordinate the fabrication of the door frames with the requirements of the building and security-type hardware scheduled.

2.5 SHOP PAINTING

A. Clean, treat, and paint welds and exposed surfaces of steel door and frame units, including galvanized surfaces.

B. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.

C. Apply shop coat of prime paint to all doors and frames of even consistency to provide a uniformly finished surface ready to receive finish paint.

1. Refer to "Section 09900 - Painting" of these specifications for the field applied finishing materials and requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install steel doors, frames, and accessories in accordance with final shop drawings and manufacturer's data, and as specified.

B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames", unless otherwise indicated.

1. Where possible, place frames prior to construction of walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders.

2. Locate wall anchors at hinge and strike levels. Secure frames to adjacent concrete or masonry with machine screws and masonry anchors. Attach wall anchors to studs with tapping screws. Install fire-rated frames in accordance with NFPA Std. No. 80.

3. Coordinate installation of door frames that have electrical or security components with electrical and security contractors, to ensure appropriate connection of wiring conduit to the respective components.

3.2 DOOR INSTALLATION

A. Fit hollow metal doors accurately in frames, within clearances specified in SDI-100; 1/8" at head and jambs.

B. Place fire-rated doors with clearances required in NFPA Standard No. 80.

C. Inspect work after installation and repair damaged items equal to new work, or remove and replace damaged items.

3.3 ADJUST AND CLEAN

A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible primer.

B. Final Adjustments: Check and adjust finish hardware, leaving steel doors and frames undamaged and in proper operating condition.

END OF SECTION

SECTION 08210 - WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide wood doors in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Interior flush wood doors, as indicated.

2. Factory finishing of wood doors.

3. Preparation for finish hardware for wood doors.

B. Related Sections

1. Section 06400 - Architectural Woodwork.
2. Section 08710 - Door Hardware.
3. Section 09250 - Gypsum Board Assemblies.

1.2 SUBMITTALS

A. Product Data: Door manufacturer's technical data for each type of door required, including details of construction relative to materials, dimensions of individual components, profiles and finishes.

B. Shop Drawings: Indicate location and size of each door; elevation of each door; construction details not covered in product data; location and extent of hardware cutouts; fire ratings; and factory finishing requirements.

C. Samples: Corner section, 18" square, showing edges, faces, joinery, and material qualities of typical wood door type and finish required.

D. Certificate of Product Compliance: Manufacturer's certificate evidencing compliance of wood doors with specifications.

1.3 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain wood doors from a single manufacturer.

B. Product Certification: Require door manufacturer to certify that doors comply with specified requirements including those of referenced door standard.

1. Mark, label or otherwise identify non-fire-rated wood doors as complying with National Wood Window and Door Association (NWWDA) I.S.6.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with NWWDA pamphlet "How to Store, Handle, Finish, Install and Maintain Wood Doors" and with manufacturer's instructions and with applicable requirements of referenced door standard.

B. Identify each door with individual opening numbers which correlate with shop drawing and Construction Document designation systems for doors, frames and hardware, using temporary, removable or concealed markings.

1.5 PROJECT CONDITIONS

A. Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with requirements of the following quality standard applicable to project's geographical location.

1. "Architectural Woodwork Quality Standards" including Section 100-S-3 "Moisture Content" of Architectural Woodwork Institute (AWI).

PART 2 - PRODUCTS

2.1 WOOD DOORS

A. AWI Quality Standard: Comply with "Architectural Woodwork Quality Standards" including Section 1300 "Architectural Flush Wood Doors" of Architectural Woodwork Institute (AWI).

B. Interior Doors: Comply with the following requirements:

1. Grade of Doors for Opaque Finish: Premium.

2. Wood Species of Doors for Opaque Finish: Any hardwood that when finished will not telegraph any imperfections to the surface finish.

3. Core Construction: PC-5, particleboard core.

a. Thickness: 2-1/4", unless otherwise noted.

2.2 FABRICATION

A. General: Miter joints, where shown or where required to be shop-mitered, by jointing, splining and gluing to comply with the requirements of the specified grade.

B. Factory-premachine wood doors for hardware and cut outs for security devices; comply with final hardware schedule, door frame shop drawings and hardware templates.

2.3 FACTORY FINISHING

A. Quality Standard: Comply with AWI Section 1500.

B. Factory Finishing: To the greatest extent possible, finish architectural wood doors at factory. Defer only final touch-up, cleaning and polishing for time after delivery and installation.

C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing of concealed surfaces and similar preparations for finishing of architectural wood doors, as applicable to each unit of work.

D. Opaque Finish: Provide AWI System #OP-01 Standard Lacquer, Premium Grade, with color, effect and gloss to match approved sample.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine installed door openings prior to hanging doors. Verify that openings comply with indicated requirements for type, size, location, and characteristics and have been installed with plumb jambs and level heads.

B. Reject all doors with defects. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation see Division-8, Section 08710 - "Finish Hardware" and Door Schedule section of these specifications.

B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions, applicable requirements of referenced quality standard, and as indicated.

C. Job-Site Fit Doors: Fit doors to wood door frames (specified in section 06400) and machine for hardware to whatever extent not previously worked at factory as required for fit and uniform clearance at each edge. Touch-up cut edges.

1. Provide 1/8" at jambs and heads. Provide 1/4" clearance at floor and 1/4" clearance at finish floor.

3.3 ADJUSTING AND PROTECTION

A. Operation: Rehang or replace doors which do not operate freely.

B. Refinish or replace doors damaged during installation, as required and as directed by the Architect.

C. Protect doors to ensure that doors are without damage at time of Substantial Completion.

END OF SECTION

SECTION 08305 - ACCESS DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide access doors in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Access doors in partitions and ceilings, as required.

B. Related Sections

1. Section 04200 - Unit Masonry.
2. Section 07900 - Joint Sealers.
3. Section 09250 - Gypsum Board assemblies.
4. Section 09300 - Tile.
5. Section 09900 - Painting.
6. Division 15 and 16 - Mechanical and Electrical.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and installation instructions for each type of access door assembly, including setting drawings, templates, instructions, and directions for installation of anchorage devices.

1. Include complete schedule with locations shown on reflected ceiling plan, including types, general locations, sizes, wall and ceiling construction details, finishes, latching or locking provisions, and other data pertinent to installation.

B. Shop Drawings: Submit shop drawings for fabrication and installation of access doors and frames, including details of each frame type, elevations of door design types, anchorage and accessory items.

1. Include complete schedule, including types, general locations, sizes, wall and ceiling construction details, latching or locking provisions, and other data pertinent to installation.

C. Samples: Provide a 12" square sample of each panel face material, showing factory-finished color and texture.

D. Verification: Obtain specific locations and sizes for access doors from trades requiring access to concealed equipment, and indicate on submittal schedule.

1.3 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain access doors for entire project from one source from a single manufacturer.

B. Fire-Resistance Ratings: Wherever a fire-resistance classification is indicated, provide access door assembly with panel door, frame, hinge, and latch from manufacturer listed in Underwriters Laboratories, Inc.'s "Building Materials Directory" for rating shown.

1. Provide UL label on each fire-rated access door.

C. Coordination: Furnish inserts and anchoring devices which must be built into other work for installation of access doors.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's unopened containers. Handle and store units to protect them from dirt, damage and deterioration.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include the following:

1. Karp Associates, Inc.
2. J.L. Industries
3. Milcor Div.; Inryco, Inc.

2.2 MATERIALS

A. Steel Sheet: ASTM A 366 commercial-quality, cold-rolled steel sheet with baked-on, rust-inhibitive primer.

B. Zinc-Coated Steel Sheet: ASTM A 591, Electrolytic zinc-coated steel sheet with Class C coating and phosphate treatment to prepare surface for painting.

C. Stainless-Steel Sheet: ASTM A 167, Type 304 with No. 4 finish.

2.3 ACCESS DOORS

A. General: Furnish each access door assembly manufactured as an integral unit, complete with all parts prime painted and ready for installation, refer to Section 09900 Painting for finishing requirements.

B. Steel Access Doors and Frames: Fabricate units of continuous welded steel construction. Grind welds smooth and flush. Furnish anchors and fasteners of type required to secure access panels.

C. Doors and Frames: For doors 12" x 12" or smaller, door shall be 14 gage steel and frame shall be 16 gage steel. For assemblies up to 18" x 18" fabricate doors from not less than 12 gage steel sheet.

1. For gypsum drywall furnish perforated frames with drywall bead.

2. For fire-rated units, provide manufacturer's standard insulated flush panel/doors, with continuous piano hinge and self-closing mechanism.

3. For standard units, provide manufacturer's standard flush panel/doors, with continuous piano hinge.

D. Locking Devices: Furnish flush cylinder locks, locks of number required to hold door in flush, smooth plane when closed. Key locks to building keying system. Furnish 2 keys per lock.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's instructions for installation of access doors. Coordinate installation with work of other trades.

B. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

3.2 ADJUST AND CLEAN

A. Adjust hardware and panels after installation for proper operation.

B. Remove and replace panels or frames which are damaged or defective.

END OF SECTION

SECTION 08450 - METAL AND GLASS PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide metal and glass partition system in accordance with the Contract Documents. The Work of this Section generally includes, but is not necessarily limited to, the following:

1. Full-height modular steel and glass office partition systems, as indicated.

B. Related Sections

1. Section 03310 - Cast-In-Place Concrete.
2. Section 08110 - Steel Doors and Frames.
3. Section 08710 - Door Hardware.
4. Division 16 - Electrical Work.

1.2 SUBMITTALS

A. Product Data: Submit product data for each type of partition and accessory specified. Include methods of installation for each differing installation condition.

B. Shop Drawings: Submit shop drawings detailing dimensioned plans and elevations and details of installation. Include large scale details of connections and joint conditions, connectors, and other related components. Illustrate fastener type and connection methods to each type of permanent wall, ceiling system and floor condition. Detail installation at special conditions.

C. Samples: Submit samples, 12" long, of each exposed component showing proposed finish indicating the expected range of finish. Submit samples of assembled corners.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has successfully completed partition installations similar in material, design, and extent to that indicated for Project.

B. Mock-up: In a location designated by the Architect, provide a full scale installation incorporating typical door, panel, and accessory required. The approved mock-up shall be incorporated into the work.

1.4 WARRANTY

A. Special Product Warranty: Submit a written warranty, executed by Manufacturer, agreeing to repair or replace partition units which fail in materials or workmanship within the specified warranty period.

1. Warranty period is 3 years after the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Available Manufacturer: Subject to compliance with requirements, provide partition system "Model #150 (Modified)" as manufactured by ACME STEEL PARTITION, DIVISION OF ACME OFFICE GROUP, or approved equal.

2.2 MATERIALS

A. General: Provide materials which have been selected for their surface flatness, smoothness and freedom from surface blemishes where exposed to view in the finished unit. Exposed-to-view surfaces which exhibit pitting, seam marks, roller marks, "oil- canning", stains, discolorations or other imperfections on finished units will not be acceptable.

B. Steel: Provide steel in the form indicated complying with the following requirements:

1. Steel Plates, Shapes, and Bars: ASTM A 36.

2. Cold Rolled Steel Sheets: Commercial quality carbon steel complying with ASTM A 366 and ASTM A 568.

3. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526; with a G60 coating designation, will phosphatized.

2.3 PARTITION SYSTEM

A. Provide partition system of the sizes and profiles shown. Partition framing shall be reinforced to accept the hardware and glazing systems. System shall have required internal reinforcement and attachment clips as required to attach the partition system the adjoining construction.

B. Partition Seal: Continuous extruded neoprene of color selected by the Architect.

2.4 FABRICATION

A. Form metal components of not less than 20 gage steel to the required shapes and sizes, with true lines and angles. Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners wherever possible.

B. Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded joints of all welding flux, and dress on all exposed and contact surfaces.

C. Mill joints to a tight, hairline fit. Cope or miter corner joints.

D. Finish exposed surfaces to smooth, well defined, sharp lines and arises.

2.5 SHOP FINISHING

A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated.

B. Protect mechanical finishes on exposed surfaces from damage by application of strippable temporary protective covering prior to shipment.

2.6 STEEL FINISHES

A. Surface Preparation: Solvent-clean surfaces in compliance with SSPC-SP 1 to remove dirt, oil, grease and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel in compliance with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).

B. Baked Enamel Finish: Immediately after cleaning and pretreatment, apply manufacturer's standard 2-coat baked enamel finish consisting of prime coat and thermosetting topcoat. Comply with paint manufacturer's instructions for application and baking to achieve a minimum dry film thickness of 2.0 mils.

1. Color and Gloss: Provide custom color matching the Architect's sample.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install all glass doors, partitions and accessories after other finishing operations, including painting, have been completed.

B. Install all glass assemblies to comply with approved Shop Drawings, manufacturer's recommendations and printed instructions.

C. Install components with surfaces flat and with straight tight vertical and horizontal joints, with components assembled into a rigid structure, fitted to building conditions, straight and plumb with horizontal lines level.

D. Conceal screws, nuts, and rivets. Replace damaged items with new materials.

END OF SECTION

SECTION 08710 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide door hardware in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Furnish and install door hardware, as scheduled.

B. Related Sections

1. Section 08110 - Steel Doors and Frames.
2. Section 08210 - Wood Doors.
3. Section 08305 - Access Doors.
4. Section 08450 - Interior Metal and Glass Partitions.
5. Division 16 - Electrical.

1.2 QUALITY ASSURANCE

A. Finish hardware where required shall conform to the applicable requirements of the American Insurance Association, Underwriter's Laboratories, Inc., local codes and all other regulations and agencies having jurisdiction. Such items of hardware shall bear a label or mark indicating its conformance to the above requirements.

1. The hardware indicated is the minimum required. Provide additional items of hardware to properly equip the opening as required to satisfy code and function requirements.

B. Manufacturer: A finish hardware manufacturer who has been successfully manufacturing products of the type specified for not less than 5 years. Each type of finish hardware or accessory shall be obtained from only one manufacturer.

C. Supplier: Finish hardware supplier who have been furnishing finish hardware, for a period of not less than 2 years. The finish hardware supplier shall be or have in employment an Architectural Hardware Consultant (AHC) in good standing as certified by the Society of Architectural Hardware Consultants Council.

1. Each supplier shall be available as required during the course of the work for project hardware consultation to the Architect and Contractor. Upon completion of the work each supplier shall inspect their installations with manufacturer's representatives and submit a letter to the Owner advising that all items required have been installed and are operating properly.

1.3 REFERENCES

A. Comply with applicable provisions of the following reference standards except as otherwise shown or specified.

1. Building Hardware Manufacturer's Association (BHMA).

2. Underwriter's Laboratories (UL).

3. United States Standards (US).

4. Hollow Metal Manufacturer's Association, Division of the National Association of Architectural Metal Manufacturers.

5. American National Standards Institute (ANSI).

6. Door and Hardware Institute (DHI).

1.4 SUBMITTALS

A. Hardware supplier shall prepare and submit for approval 6 copies of the complete detailed hardware schedule. This shall be done within 30 working days after receipt of Award of Contract.

B. The Architect will check the schedule submitted for quality and types, but the supplier of hardware shall be solely responsible for handling any errors or omissions of the schedules, and all security hardware equal in kind and quality to that herein specified or required shall be supplied.

C. Identify hardware items unsuitable for use as scheduled.

D. If requested by the Architect, a sample of each hardware item will be supplied as required for comparison with hardware as furnished. Any deviation from hardware schedule shall be replaced with the proper hardware at hardware supplier's expense.

E. Templates and/or shop drawing information shall be sent to each manufacturer who requires such information. Approved hardware schedule shall be sent to each manufacturer who requires template information.

F. Maintenance instructions.

1.5 PRODUCT HANDLING

A. As hardware is received, sort and repackage in containers marked with the hardware set number.

B. Upon delivery to job site, Contractor's representative shall inventory the delivered hardware with a representative of the hardware supplier. Both Contractor and supplier shall be satisfied that the count is correct before delivery is accepted. Copies of all shipping and receiving reports shall be forwarded to the Architect.

C. Hardware installer shall provide secure lock-up for hardware that is not installed. Control the handling and installation of hardware items which are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses, both before and after installation.

1.6 JOB CONDITIONS

A. Coordination: Coordinate hardware with other work. Tag each item or package separately, with identification related to the hardware schedule, and include basic installation instructions in the package. Provide hardware items of proper design for door thickness, profile, swing, security and similar requirements, for proper installation and function. Deliver individually packaged hardware items at the proper times to the proper locations for installation.

B. Product Information: Furnish hardware templates installation instructions and wiring diagrams as required to each fabricator of doors and frames to be factory-prepared for the installation of hardware. Upon request, check the shop drawings of such other work, to confirm that adequate provisions are made for the proper installation of hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED HARDWARE

A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of builders' hardware are indicated. Products are identified by using appropriate hardware designation numbers.

B. One or more manufacturers are listed for each hardware type required. Provide either the product designated, or the equivalent product of one of the other listed manufacturers. Provide products of a single manufacturer for each product type.

2.2 MATERIALS AND FABRICATION, GENERAL

A. The drawings show the direction of movement of each door leaf. Furnish each item of hardware for proper installation and operation of the door movement as shown.

B. Do not use manufacturer's products which have manufacturer's name or trade name in a visible location, except in conjunction with required UL labels.

C. Provide hardware units of no lesser quality than specified. Do not furnish "optional" materials or forming methods for those indicated.

D. Fasteners: Manufacture hardware to conform to published templates, generally prepared for machine screw installation. Do not furnish hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

1. Provide concealed fasteners for hardware units which are exposed when the door is closed, except to the extent no standard units are available with concealed fasteners. Standard exposed fasteners shall be modified to render the installations vandal resistant, but readily serviceable for maintenance. Welded covers will not be acceptable.

E. Should any hardware, even though required by the Contract Drawings or Specifications, fail to meet the intended requirements or require modification to suit or fit the designated location, such correction and modification shall be made as necessary and in ample time to void delay in the manufacture and delivery of the hardware. Changes and modifications shall not be made without prior notification, and approval, by the Architect. The Contractor shall make such corrections and modifications as directed and approved without extra cost to the Owner.

2.3 HINGES

A. Butt Hinges - Acceptable Manufacturers

1. McKinney Mfg. Co.
2. Stanley.
3. Hager Hinge Co.

B. Note: Unless otherwise noted, butt hinges shall be full mortise, five knuckle ball or oil impregnated bearings with flat button tip.

1. Doors up to 3'-0" - Standard Weight. FBB179 - 4" x 4".

2. Doors over 3'-0" and Exterior Doors - Heavy Weight. Fbb199 - 5" x 4-1/2",

3. Doors up to 7'-6" - 1-1/2 pair per leaf.

4. Doors over 7'-6" to 10'-0" - 2 pair per leaf.

C. Interior doors shall have steel hinges primed for painting (USP), unless otherwise indicated.

D. Provide 4 wire CC hinges for electric locks.

E. Hinges shall conform to ANSI/BHMA A156.1.

F. Spring Hinge: 2060R - 4-1/2" x 4-1/2" (Stanley).

2.4 OVERHEAD CLOSERS

A. Acceptable Manufacturers

1. Sargent
2. LCN
3. Norton

B. Closers are required to be accessible to the physically handicapped. Provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing. Provide parallel arms as required to suit swing condition.

C. Closers scheduled for fire labeled doors shall bear Underwriter's Laboratories, Inc. approval.

D. Closers shall have secure arms and full covers, without design features.

E. Closers shall be sized in accordance with the accepted manufacturer's standards to suit height, width, weight of door and draft conditions.

F. Closers shall conform to ANSI/BHMA A156.4.

2.5 MORTISE LOCKS

A. Acceptable Manufacturers

1. Schlage
2. Sargent

B. Provide nonferrous metal strikes with lips of sufficient length to protect jambs. Finish strikes with wrought box strikes and treat lock parts with bronze alloy plating to resist corrosion.

C. Locks shall comply with ANSI/BHMA A156.13.

2.6 CYLINDERS AND KEYING

A. Provide locks which comply with performance requirements of ANSI.

1. All electric locks shall be "Fail Safe" unless otherwise noted (8270).

B. Supplier shall provide for a masterkeyed system and will meet with the Architect and Owner to determine additional keying requirements. The Contractor shall obtain final instructions in writing. The keying schedule will be forwarded to the Contractor by the Architect upon acceptance of the shop drawings and hardware schedule.

C. Keys: Furnish individual change keys for each lock which is not designed to be keyed alike with a group of related locks.

1. Key Material: Provide keys of nickel silver only.

2. Key Quantity: Furnish 3 change keys for each lock and 5 master keys for each master system. Provide 6 construction master keys.

3. Deliver keys to the Owner at Final Completion.

D. Pivots: Acceptable Manufacturers:

1. Rixson.
2. McKinney.
3. Sargent.

2.7 BOLTS

A. Acceptable Manufacturers

1. Ives.
2. Glynn-Johnson.

B. Provide extension type flush bolts. Provide each bottom flushbolt with a dustproof strike.

2.8 DOOR STOPS/OVERHEAD STOPS

A. Acceptable Manufacturers

1. Ives
2. Glynn-Johnson
3. Sargent

B. Where wall stops are to be used for doors located in gypsum board partitions, provide 20 gage reinforcing concealed in partition, spanning two studs and width as required.

C. Provide wall stops at all locations were directed by the Architect.

1. Provide overhead stops at doors where wall stops cannot be used and where wall stops are in public corridors. Sargent 1540S.

2.9 SILENCERS/CATCHES

A. Acceptable Manufacturers

1. Ives
2. Glynn-Johnson.

B. Provide silencers for all non-gasketed metal frames. Provide 3 for each single swing door.

2.10 EXIT DEVICES

A. Provide two units where door pairs are indicated.

B. Acceptable Manufacturers

1. Sargent.
2. Von Duprin

2.12 KICK/PUSH-PULL PLATES

A. Armor Plates: Stainless steel 302 or 304. .050 thick, height 40 5/16 in.

B. Kick Plates: Stainless steel 302 or 304, .050 thick, with 3 beveled edges. Height 16".

1. Sizes: 1-1/2" less door width on single door and 1" less door width on pair doors.

C. Acceptable Manufacturer

1. Rockwood Mfg.
2. Burns Mfg.

2.12 FINISHES

A. Finishes Specified

1.	Interior Hinges (H.M.)	USP.
2.	Interior Hinges (WD)	US26D (626).
3.	Locks and Latches	US32D (630).
4.	Exit Devices	US32D (630).
5.	Door Closers	EN
6.	Push-Pull-Kick Plates	US32D (630).
7.	Stops and Holders	US26D (626).
8.	Miscellaneous	US26D (626).

PART 3 - EXECUTION

3.1 GENERAL

A. Furnish suitable templates, together with the reviewed finish hardware schedule, to the respective trades as required, to insure the accurate setting and fitting of finish hardware.

3.2 HARDWARE APPLICATION

A. Locate hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations and except as may be otherwise directed.

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finish work specified in the Division-9 Sections. Do not install surface-mounted items until finishes have been completed on the substrate.

C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

3.3 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Demonstrate to the Architect that each item is in perfect working order and that tagged keys operate respective locks. Correct items of hardware not acceptable to the Architect. Deliver tagged keys to the Architect upon acceptance of each core cylinder installation.

C. Adjust door control devices to compensate for final operation of heating, cooling and ventilation equipment.

3.4 HARDWARE SETS

Refer to attached hardware schedule.

END OF SECTION

Hardware Schedule

Set No.	Quantity	Item	Model No.	Description	Manufacturer	Finish
1	2 Pair	Hinge	FBB-179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	S50 PD F80	Cylindrical Type "Neptune"	Schlage	FIN# 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Coat Hook	581	For Metal Frame	Ives	US 26D
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
2	2 Pair	Hinge	FBB-191	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Stailess Steel
	1	Lockset	L9050 F04	Mortise Type	Schlage	FIN# 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	1	Coat Hook	581	For Wood	Ives	US 26D
	3	Silencers	21	For Wood	Ives	
3	1 ½ Pair	Hinge	FBB-179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Hinge	CEFBB-179	4½ x 4 ½ Full Mortise Electric	Stanley	Paint Grade Stl. Fin.
	1	Lockset	L9080PEU (RX)	Mortise Type	Schlage	Fin # 626 W/ Egress Switch
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Closer	2010	Fully Concealed	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
3A	1 ½ Pair	Hinge	FBB-191	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Stainless Steel
	1	Hinge	CEFBB-191	4½ x 4 ½ Full Mortise Electric	Stanley	Paint Grade Stl. Fin.
	1	Lockset	L9080PEU (RX)	Mortise Type	Schlage	Fin # 626 W/ Egress Switch
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
4	2 Pair	Off-set Pivot	T-1, D-1, B-1	Custom Made	Rajack	US 26D
	2	Wire Pull	8/02-8"	8"L x3/4"DIA.	Ives	US 26D
	1	Magnetic Catch	327		Ives	Aluminum finish
	2	O.H. Stop	5-213 / 5-313	Concealed	Rixon	US 26D
5	2	Hinge	FBB-179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	L9080 F07	Mortise Type	Schlage	Fin # 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Closer	1460T-72FC	Surface Mtd.	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
5A	2	Hinge	FBB-179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	S80 PD-F86	Cylindrical Type	Schlage	Fin # 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Closer	1460T-72FC	Surface Mtd.	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	

Hardware Schedule

Set No.	Quantity	Item	Model No.	Description	Manufacturer	Finish
6	2 Pair	Push / Pull	DP6111	23" Long Back to Back Mtng.	Forms & Surfces	US 26D
	1	Magnetic Lock	DD4010	Electromagnetic Lock	Von Duprin	Aluminum finish
	4Pair	Hinge	FBB 191	41/2 x 41/2 Full Mortise Butt Hinge	Stanley	Stailess Steel
	2	Floor Stop	438	Floor Mtd.	Ives	US26D
	4	Silencers	20	For Metal Frame	Ives	
	2	Closer	2010	Conceal Type	LCN	Aluminum finish
7	1Pair	Push / Pull	DP6111	23" Long Back to Back Mtng.	Forms & Surfces	US26D
	1	Magnetic Lock	DS4010	Electromagnetic Lock	Von Duprin	Aluminum finish
	1	Closer	2010	Coceal Type	LCN	Aluminum finish
	3	Silencers	20	For Metal Frame	Ives	
	1	Floor Stop	438	Floor Mtd.	Ives	US26D
8	31/2 Pair	Hinge	FBB179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	L9080PEU (RX)	Mortise Type Elec. Lock	Schlage	Fin # 626 W/ Egress Switch
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Elec. Hinge	CEFBB-179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Flush Bolt	457	For Metal Frame	Ives	US 26D
	1	Dust Proof Strike	489 / 487		Ives	US 26D
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
	1	Closer	1460T-72FC	Surface Mtd.	LCN	Aluminum finish
9	4 Pair	Hinge	FBB 191	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Stainless Steel
	1	Lockset	L9050 F04	Mortise type	Schlage	Fin # 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Flush Bolt	457	For Metal Frame	Ives	US 26D
	1	Dust Proof	489 / 487		Ives	US 26D
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	1	Closer		2010 Concealed Type	LCN	Aluminum finish
	3	Silencers	20	For Metal Frame	Ives	
9A	4 Pair	Hinge	FBB 191	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Stainless Steel
	1	Lockset	L9080PEU (RX)	Mortise type	Schlage	Fin # 626 W/ Egress Switch
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Flush Bolt	457	For Metal Frame	Ives	US 26D
	1	Dust Proof Strike	489 / 487		Ives	US 26D
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	1	Closer		2010 Concealed Type	LCN	Aluminum finish
	3	Silencers	20	For Metal Frame	Ives	

Hardware Schedule

Set No.	Quantity	Item	Model No.	Description	Manufacturer	Finish
10	2 Pair	Hinge	FBB 179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	S40D F76	Cylindrical Type "Neptune"	Schlage	Fin # 626
	1	*Cylinder*			*Schlage*	*Satin Chrome Fin.*
	1	Closer	1460T-72FC	Surface Mtd.	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Wood Frame	Ives	
11	2 Pair	Hinge	FBB191	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Stainless Steel
	1	Lockset	L9040 F22	Mortise Type	Schlage	Fin # 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	*Closer*	*2010*	*Concealed*	*LCN*	*Aluminum finish*
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	21	For Wood Frame	Ives	
12	2 Pair	Hinge	FBB179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	S50PD F82	Cylindrical Type " Neptune"	Schlage	Fin # 626
	1	Closer	2010	Fully Concealed	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
	1	Cylinder			Schlage	Satin Chrome Fin.
13	2 Pair	Hinge	FBB179	*4½ x 4 ½ Full Mortise Butt Hinge*	Stanley	*Paint Grade Stl. Fin.*
	1	Lockset	S10D F75	Cylindrical Type " Neptune"	Schlage	Fin # 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	1	Closer	1460T-72FC	Surface Mtd.	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
13A	2 Pair	Hinge	FBB179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	L9010 F01	Mortise Type	Schlage	Fin # 626
	1	Closer	2010	Concealed	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	3	Silencers	20	For Metal Frame	Ives	
	1	Cylinder			Schlage	Fin # 626
14	4 Pair	Hinge	FBB 191	41/2 x 41/2Full Mortise Butt Hinge	Stanley	Stainless Steel
	1	Lockset	L9465	Mortise Type	Schlage	Fin # 626
	1	Flush Bolt	457	For Wood Frame	Ives	US 26D
	1	Dust Proof Strike	489 / 487		Ives	US 26D
	2	O.H. Stop	5-313	Concealed	Rixon	US 26D
	3	Silencers	21	For Wood Frame	Ives	

Hardware Schedule

Set No.	Quantity	Item	Model No.	Description	Manufacturer	Finish
15	1	Lockset /	L Series to match Function	Mortise Type /	Schlage	Fin # 626
	1	Lockset	S Series to match Function	Cylindrical Type " Neptune"	Schlage	Fin # 626
16	4 Pair	Hinge	FBB179	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	L9080 F07	Mortise Type	Schlage	Fin # 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	2	Closer	1460T-72FC	Surface Mtd.	LCN	Aluminum finish
	1	Automatic Flush Bolt	559	For Metal Frame	Ives	US 26D
	1	Dust Proof Strike	489 / 487		Ives	US 26D
	1	Coordinator	469		Ives	Aluminum finish
	4	Silencers	20		Ives	
	1	Astrigal	41		Zero	Aluminum finish
17	1	Hinge	CEFBB 179	4½ x 4 ½ Full Mortise Electric Hinge	Stanley	Paint Grade Stl. Fin.
	1	Lockset	L9080PEU (RX)	Mortise Type	Schlage	Fin # 626
	1	Cylinder			Schlage	Satin Chrome Fin.
	3	Silencers	20	For Metal Frame	Ives	
18	11/2 Pair	Hinge	FBB 191	4½ x 4 ½ Full Mortise Butt Hinge	Stanley	Stainless Steel
	1	Hinge	CEFBB 191	4½ x 4 ½ Full Mortise Electric Hinge	Stanley	Stainless Steel
	1	Lockset	L9080PEU (RX)	Mortise Type	Schlage	Fin # 626
	1	Cylinder			Schlage	Fin # 626
	1	Closer	2010	Concealed	LCN	Aluminum finish
	1	Floor Stop	438	Floor Mtd.	Ives	US 26D
	4	Silencers	20		Ives	

SECTION 08800 - GLASS AND GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide glass and glazing in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Clear float and tempered glass, as scheduled.

2. Clear, frosted glass, as scheduled.

3. Polished mirror glass, as scheduled.

4. Ballistic resistant acrylic glazing, as scheduled.

5. Anti-reflective glass, as scheduled.

6. Glazing accessories.

1.2 QUALITY ASSURANCE

A. Standards: Comply with applicable provisions and recommendations of:

1. FGMA "Glazing Sealing Systems Manual" and "Glazing Manual".

2. CPSC "Safety Standard for Architectural Glazing Materials" (16 CFR 1201).

3. FS DD-G-451, prime glass standard.

B. Manufacturer's Qualifications: Provide glazed systems produced by a single manufacturer with not less than 5 years successful experience in the fabrication of assemblies of the type and quality required.

C. Installer's Qualifications: Glazed systems shall be installed by a firm that has not less than 5-years successful experience in the installation of systems similar to those required.

1.3 SUBMITTALS

A. Samples: Submit 12" square samples of each glass product. Submit 6" long samples of glazing sealant and glazing tape, for color review.

B. Manufacturer's Data: Submit manufacturers' technical data and instructions for installing and maintaining each glazing material.

C. Shop Drawings: Submit shop drawings for fabrication and installation of glazed systems, including the following:

1. Framing, bracing and supports.
2. Elevations.
3. Detail sections of composite members.
4. Anchorages and reinforcements.
5. Glazing details.

1.4 EXTENDED WARRANTIES

A. General: Submit warranties signed by the respective manufacturers agreeing to repair or replace defective materials or workmanship within the specified warranty periods, starting from the date of substantial completion.

1. Mirror Glass: Submit a ten (10) year warranty against defects, including silver spoilage of the mirror glass specified.

2. Defects include but are not limited to visual blemishes, silver spoilage and other defects or imperfections.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, firms producing glass products which may be incorporated into the work include the following:

1. PPG Industries, Inc.
2. Bendheim.
3. Schott Corporation
4. GAFFCO.
5. Rohm & Haas.

2.2 GLASS PRODUCTS, GENERAL

A. Primary Glass Standard: Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable, form, finish, and pattern.

B. Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

C. Edges: All glass edges shall be ground and polished with eased arises, unless otherwise indicated on Drawings.

1. Provide mirror and frosted glass with beveled and polished edges, unless otherwise indicated.

2.3 PRIMARY FLOAT GLASS

A. Float Glass: ASTM C 1036, Type I (transparent glass, flat), Class 1 (clear) unless otherwise indicated (glazing select).

2.4 TEMPERED GLASS

A. Uncoated Clear Heat-Treated Float Glass: Comply with ASTM C 1048, Condition A, Type 1, Class 1, Quality q3, Kind FT.

B. Safety Glazing: Where safety glass is indicated or required by authorities having jurisdiction, provide products which comply with ANSI Z 97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.

1. Provide anti-reflective glass with a residual reflection of 1 percent (maximum) at 90 degrees.

2.5 BALLISTIC RESISTANT ACRYLIC GLAZING

A. Acrlic Glazing Sheet: Provide the following ballistic resistant glazing materials as manufactured by GAFFCO.

2. Provide "Multi-Ply Laminated Glass", model #GPC 1006, 1-1/2 inch thick with polished edges, in locations indicated.

3. Provide "Glass/Polycarbonate Composite", model #GPC 1012, 1-1/4 inch thick with polished edges, in locations indicated.

4. Colors: Clear, unless otherwise indicated.

2.6 MIRROR GLASS

A. Glass for Mirrors: Clear float glass conforming to specified standard, quality q2, silvering, 1/4" thick.

B. Fabrication: Cut glass to sizes indicated and complete edge treatment. Grind, polish and bevel mirror edges not framed. Coat back of glass with chemically deposited silver, covered by film of electrically or chemically deposited copper, and coated with manufacturer's standard 2-mil dry film of organic coating.

2.7 GLAZING MATERIALS

A. General: Provide standard color of glazing materials as selected by Architect. Comply with manufacturer's recommendations for applications and conditions at time of installation.

B. Polyurethane Glazing Gasket: Polyurethane gasket or stick tape, color to be selected by Architect, thickness and size as shown on drawings.

C. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

D. Setting Blocks: Neoprene, silicone or EPDM, 70-90 durometer hardness, with proven compatibility with glazing materials used.

E. Spacers: Neoprene, silicone or EPDM, 40-50 durometer hardness with proven compatibility with glazing materials used.

F. Compressible Fillers: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

G. Stops: As indicated in the Architect's drawings.

H. Sealant: One-Part Acid-Curing Clear Silicone Glazing Sealant: Type S; Grade NS; Class 25.

PART 3 - EXECUTION

3.1 GENERAL

A. Each glazing installation must withstand normal temperature changes, and impact loading without failure of glass, failure of sealants or gaskets, deterioration of glazing materials and other defects in the work.

B. Protect glass from damage during handling and installation, and subsequent operation of glazed components of the work. Discard units with edge damage or other imperfections.

C. Glazing channel dimensions are intended to provide for necessary bite on glass, minimum edge clearance, and adequate tape or sealant thicknesses, with reasonable tolerances.

D. Comply with recommendations by manufacturers of glass and glazing products, except where more stringent requirements are indicated, including those of referenced glazing standards.

3.2 PREPARATION

A. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrate.

B. Where sealants are used, apply primer or sealant to joint surfaces where recommended by sealant manufacturer.

3.3 GLAZING

A. Where indicated, provide spacers for size and spacing required for glass sizes larger than 50 united inches, except where gaskets or pre-shimmed tapes are used for glazing. Provide 1/4" minimum bite of spacer on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

B. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

C. Where sealants are used at butt joints, apply sealant in thin continuous clear bead. Tool sealant to a uniform, continuous, even profile.

D. After "frosted/sandblasted" glass has been installed, thoroughly clean all exposed surfaces in accordance with the glass manufacturer's recommendations.

3.4 PROTECTION AND CLEANING

A. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

B. Wash and polish glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish Date of Substantial Completion in each area of project. Comply with glass manufacturer's recommendations for final cleaning.

3.5 SCHEDULE (ARCHITECT TO VERIFY)

A. G-1: Anti-Reflective Glass.

1. Manufacturer: Schott Corporation, Technical Glass Div.
2. Model: Amiran.
3. Color: Water white/polished.
4. Thickness: 11/32", unless otherwise indicated.
5. Kind: Anti-reflective laminated safety glass.

B. G-2: Clear Tempered Glass.

1. Manufacturer: PPG Industries Inc.
2. Color: Clear/polished.
3. Thickness: 1/4", unless otherwise indicated.
4. Kind: Float.

C. G-3: Clear Tempered Glass.

1. Manufacturer: PPG Industries Inc.
2. Color: Clear/polished.
3. Thickness: 1/4", unless otherwise indicated.
4. Kind: Fully tempered.

D. G-4: Frosted/Sandblasted Tempered Glass.

1. Manufacturer: Bendheim.
2. Color: Clear.
3. Pattern: Matching the Architect's sample.
4. Thickness: 1/2", unless otherwise indicated.
5. Kind: Fully tempered.
6. Edge Treatment: Beveled and polished, unless otherwise indicated.

E. G-5: Polished Mirror Glass

1. Manufacturer: PPG Industries Inc.
2. Color: Clear/polished.
3. Thickness: 1/4", unless otherwise indicated.
4. Kind: Fully tempered.
5. Edge Treatment: Beveled and polished, unless otherwise indicated.

F. G-6: Ballistic Resistant Acrylic Glazing.

1. Manufacturer: GAFFCO
2. Model: GPC-1006.
3. Color: Clear/polished.
4. Thickness: 1-1/2", unless otherwise indicated.
5. Kind: Level II - ballistic resistant acrylic glazing.
6. Edge Treatment: Polished, unless otherwise indicated.

G. G-7: Ballistic Resistant Acrylic Glazing.

1. Manufacturer: GAFFCO
2. Model: GPC-1012.
3. Color: Clear/polished.
4. Thickness: 1-1/4", unless otherwise indicated.
5. Kind: Level III - ballistic resistant acrylic glazing.
6. Edge Treatment: Polished, unless otherwise indicated.

END OF SECTION

SECTION 09250 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide gypsum board assemblies in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Gypsum drywall, including screw-type metal support system.

2. Metal supports and backer boards for other finishes.

3. Drywall finishing with joint tape-and-compound.

4. Acoustical insulation and sealant for drywall.

5. Accessories, trims and other installation and finishing materials.

B. Related Sections

1. Section 06100 - Rough Carpentry.
2. Section 07100 - Sheet Membrane Waterproofing.
3. Section 08305 - Access Doors.
4. Section 09310 - Tile.
5. Section 09511 - Acoustical Panel Ceilings.
6. Section 09515 - Metal Ceilings.
7. Section 09600 - Interior Stonework.
8. Section 09900 - Painting.
9. Section 09950 - Wall Coverings.
10. Divisions 15 and 16 - Mechanical and Electrical Work.

1.2 QUALITY ASSURANCE

A. Fire-Resistance Rating: Where ratings are indicated, match applicable assemblies tested per ASTM E119 by fire testing laboratories, or to design designations in UL "Fire Resistance Directory" or in listing of other testing agencies acceptable to authorities having jurisdiction.

1. Refer to drawings for New York City BSA numbers for fire rated walls and partitions.

B. Gypsum Board Terminology Standard: GA-505 by Gypsum Association.

C. Structural Performance Requirements: Provide drywall shaft systems to withstand the following lateral design loadings (air pressures), applied transiently and cyclically, for maximum heights of partitions required, within the following deflection limits.

1. Lateral Loading: 7.5 psf.

2. Deflection Limits: 1/360 of partition height.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for materials for gypsum drywall. Submit other data as required to show compliance with these specifications.

B. Samples: Submit 12" long samples of each type of trim accessory.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packaging, bearing brand name and identification of manufacturer or supplier.

B. Store materials to keep them dry and protected from soiling, dirt or damage. Neatly stack gypsum boards flat to prevent sagging.

C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect trim accessories from being bent or damaged.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Comply with referenced standards and recommendations of gypsum board manufacturer, for environmental conditions before, during and after application of gypsum board.

B. Cold Weather Protection: When air temperature is below 55 deg F maintain temperature of not less than 55 deg F for at least 48 hours before, during and after application of joint treatment materials.

C. Ventilation: Ventilate building spaces to dry joint treatment material. Avoid drafts during dry, hot weather.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include but are not limited to the following:

1. Steel Framing and Furring

Bostwick Steel Framing Co.	National Gypsum Co.
Marino/Ware.	United States Gypsum Co.
Dale Industries, Inc.	Dietrich Industries, Inc.

2. Grid Suspension Systems

USG Interiors	Chicago Metallic Corp.
Worthington Steel Co.	Armstrong World Industries, Inc.

3. Gypsum Boards and Related Products

Georgia - Pacific Corp.	National Gypsum Co.
United States Gypsum Co.	Domtar Gypsum

2.2 CEILING SUPPORTS

A. General: Size ceiling support components to comply with City of New York Building Code and with ASTM C 754.

B. Hangers: Mild steel rods or flat bars, zinc coated or painted.

C. Hanger Anchorage Devices: Devices whose suitability for use has been proven by standard construction practices or by certified test data. Size devices for 3x load, as determined by ASTM E 488.

D. Main Runners: 1-1/2" cold rolled .475 # channel, painted.

E. Furring Members: ASTM C 645; 0.0179" minimum thickness, hat-shaped; "C"-shaped studs for spans of more than 4 feet.

F. Furring Anchorages: 16-gage galvanized wire ties, clips and anchorages recommended by furring manufacturer.

2.3 WALL AND PARTITION FRAMING

A. Studs: ASTM C 645; 0.0179" minimum thickness of base metal, except as otherwise required for structural framing.

1. Depth of Section: Standard sizes as shown.

2. Runners: Match studs; type recommended by stud manufacturer.

B. Furring Members: ASTM C 645; 0.0179" minimum thickness of base metal, hat-shaped, except "Z"-furring members.

C. Z-Furring Members: Standard screw-type galvanized steel, "Z"-shaped furring members complying with ASTM A 525, G60, 0.0179" min. thickness; of depth to suit insulation thickness indicated.

D. Fasteners for Furring Members: Type and size recommended by furring manufacturer for the substrate and application indicated.

E. Structural Framing Members: ASTM C 955 studs and runners of size, shape and gage as recommended by manufacturer for shaft walls. Provide 20 gage 0.036" thick members for framing at cementitious backer boards.

2.4 GYPSUM BOARD

A. Gypsum Wallboard: ASTM C 36, "Regular" in standard lengths as required with conventional tapered edges, 5/8" thick unless otherwise indicated.

B. Gypsum Wallboard: ASTM C 36, "Type X" fire rated assemblies in standard lengths as required with conventional tapered edges, 5/8" thick unless otherwise indicated.

C. Water-Resistant Backing Board: ASTM C 630, of type indicated, in standard lengths as required with conventional tapered edges, 5/8" thick unless otherwise indicated.

1. Provide "W/R Firecode 'C' Panels" where both water resistant and fire resistant are required.

D. Shaft Wall Liner: ASTM C 442, "Core Type", 16" or 24" wide as required to suit condition, by standard lengths as required; with beveled edges, 1" thick unless otherwise indicated.

E. Cementitious Backer Board: Panels composed of a concrete core with glass fiber mesh reinforcing on both faces covered with portland cement; average weight 3.4 lbs. per sq. ft.; 1/2" thickness. Provide one of the following:

1. The Original Wonderboard; Custom Building Products.
2. DomCrete Cementitious Tile-Backer Board; Domtar Gypsum.
3. Util-A-Crete Concrete Backer Board; FinPan, Inc.
4. DUROCK Cement Board; United States Gypsum Co.

F. Ballistic Resistant Fiberglass Panels: Provide the manufacturers standard polyester resin impregnated woven fiberglass cloth; designed to progressively delaminate upon ballistic impact. Caliber/ballistic resistance shall be as selected by the Architect, but not less than that required to stop a 240 grain soft point projectile fired from a .44 Magnum reaching a velocity of 1350-1485 feet per second.

1. Thickness: 7/16", unless otherwise indicated.

2. Product: Provide "GAFF Fiberglass/ #GFB 300", as manufactured by Gaffco, or approved equal.

G. Glass-Fiber-Surfaced Gypsum Sheathing Board (Hurricane Wall): Provide interior gypsum sheathing board consisting of noncombustible gypsum core incorporating a water-resistant material, surfaced on face and back with glass-fiber mats with alkali-resistant coating, and with unsurfaced square edges; complying with ASTM C 79, and requirements indicated below:

1. Type: Regular, unless otherwise indicated.

2. Thickness: 1/2 inch, unless otherwise indicated

3. Product: Provide "Dens-Glass Gold Sheathing" as manufactured by G-P Gypsum Corporation, or approved equal.

2.5 TRIM ACCESSORIES

A. General: ASTM C 1047; standard trim accessories of types required for drywall work, formed of galvanized steel and beaded for concealment of flanges in joint compound. Provide corner beads at external corners, L-type edge trim-beads, and one-piece control joint beads. Provide U-type edge trim beads where indicated.

1. Provide 1/2" x 1/2" reveal trim matching the Architect's sample; as manufactured by Milgo/Bufkin or approved equal.

   a. Provide reveal trims with taping edges for trims mounted to gypsum drywall construction.

2. Provide cornerbead assemblies for curved partitions, ceilings and soffits formed of metal, plastic, or metal combined with plastic, with either notched or flexible flanges that are bendable to curvature radius.

2.6 JOINT TREATMENT MATERIALS

A. General: ASTM C 475; of type recommended by the manufacturer.

B. Joint Tape, Gypsum Drywall: Paper reinforcing tape.

C. Joint Tape, Cementitious Backer Board: Glass mesh-type reinforcing tape as recommended by the board manufacturer.

D. Joint Tape, Interior Gypsum Sheathing: Woven glass mesh-type reinforcing tape (10 x 10), 2 inches wide, as recommended by the sheathing manufacturer.

E. Joint Compound: Ready-mixed vinyl-type for interior use. Provide 2 separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.

F. Water-Resistant Joint Materials: Water-resistant type for use at water-resistant backing board and as recommended by manufacturer of cementitious backer units.

G. Water-Resistant Joint Compound and Skim Coat Treatment: Provide the manufacturer's recommended rapid setting, water resistant joint compound and skim coat board treatment materials.

1. Product: Provide "Speed Set 90" as manufactured by G-P Gypsum Corporation, or approved equal.

2.7 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board.

B. Gypsum Board Screws: Comply with ASTM C 1002.

C. Concealed Acoustical Sealant: Non-drying, nonhardening, nonstaining, non-bleeding sealant for concealed applications per ASTM C 919.

D. Exposed Acoustical Sealant: Nonoxidizing, skinnable, paintable, gunnable sealant for exposed applications per ASTM C 919.

E. Acoustical Insulation: ASTM C 665, Type I; mineral fiber blanket without membrane, Class 25 flame-spread, thicknesses as indicated.

F. Asphalt Felt: ASTM D 226, Type 1 (No. 15).

G. Laminating Adhesive: Water-resistant adhesive as recommended by gypsum board manufacturer for laminating gypsum boards.

H. Leveling and Patching Compound: Latex cement as recommended by gypsum board manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Ceiling Anchorages: Coordinate work to ensure that inserts and other anchorage provisions have been installed for ceiling hangers.

B. Leveling: Apply leveling compound to existing surfaces where gypsum board will be laminated, as necessary to provide a suitable substrate.

3.2 INSTALLATION OF FRAMING, GENERAL

A. Installation Standard: Comply with ASTM C 754 and ASTM C 840. Provide support for all edges of gypsum board. Use screw fasteners only.

B. Install supplementary framing and bracing at terminations in the work and for support of toilet accessories and other construction.

1. Where handrails, cabinets and other surface applied items are attached to drywall, provide a 16 gage 8" wide galvanized steel strip behind gypsum board.

2. Install supplementary framing to coordinate with sizes of stone, wood, metal panels and similar construction, and as indicated.

3. Provide steel framing support for counters, as indicated.

C. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

D. Isolate steel framing from building structure to prevent transfer of structural loading, at locations indicated below.

1. Where edges of suspended ceilings abut building structure.

2. Where partition and wall framing abuts overhead structure.

E. Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.

F. Install structural studs and runners for shaft walls, cementitious backer units at tile and at interior gypsum sheathing (hurricane wall), to comply with performance requirements and manufacturer's recommendations.

G. Framing location tolerance shall not exceed 1/2". Install framing and furring with adjacent fastening surfaces aligned within 1/8 inch of each other.

3.3 CEILING SUPPORT SYSTEMS

A. Secure hangers directly to structure where possible, otherwise connect to inserts, clips or other anchorage devices or fasteners.

B. Space main runners 4'-0" o.c. and space hangers 4'-0" o.c. at runners.

C. Level main runners to a tolerance of 1/8" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.

D. Wire-tie or clip furring members to supports.

E. Space ceiling furring members 16" o.c. maximum.

3.4 WALL AND PARTITION FRAMING

A. Install runner tracks at floors, ceilings and structural walls and at columns where gypsum drywall stud system abuts other work. At exterior walls, install asphalt felt strips between wall and framing.

B. Extend partition stud system through ceilings to the structural support above the ceiling, unless otherwise indicated.

C. Space studs and wall furring 24" o.c. maximum, unless otherwise indicated.

1. At wall furring supported by back-up wall, space studs 16" o.c. Provide clip angles anchored to concrete masonry.

D. Frame door openings to comply with recommendations of gypsum board manufacturer, or with "Gypsum Construction Handbook" by United States Gypsum Co. Screw studs to jambs of door frames; install runner track at head of frame and secure to jamb studs.

1. Extend vertical jamb studs through suspended ceilings and attach to underside of structure above. Brace studs where required.

2. Install cripple studs in runner track above door frame.

3. Frame openings, other than door openings, with framing below sills of openings to match framing above door heads.

E. Frame openings, other than door openings, in same manner as required for door openings; and install framing below sills of openings to match framing above door heads.

F. Install interior gypsum sheathing and gypsum shaft wall framing assemblies to comply with specified performance requirements.

G. Install insulation between framing or furring members where indicated. Until gypsum board is installed, hold insulation with wire staples.

3.5 GYPSUM AND FIBERGLASS BOARD APPLICATION AND FINISHING, GENERAL

A. Application and Finishing Standards: ASTM C 840.

1. Install ballistic resistant fiberglass panels in strict accordance with the manufacturers instructions and recommendations, and in locations indicated.

B. Install acoustical insulation prior to gypsum board unless readily installed after board has been installed.

C. Locate exposed end-butt joints away from center of walls and ceilings, and stagger not less than 1'-0" in alternate courses. Install boards to form smooth curved surfaces where shown.

D. Install ceiling boards to minimize the number of end-butt joints, and to avoid end joints in the center of each ceiling. Stagger end joints at least 24".

E. Install wall and partition boards vertically to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

1. Install water-resistant and cementitious boards at ceramic tile where indicated.

2. Install gypsum board at shaftwalls for required fire-resistance rating.

3. Install interior gypsum sheathing boards at "hurricane wall" as indicated on the drawings.

F. Install gypsum board with face side out. Do not install defective or damp boards. Butt boards lightly together with not more than 1/16" space between boards. Do not force into place.

G. Locate edges and ends over supports, so that like edges abut, tapered edges against tapered edges and cut ends against cut ends. Stagger joints over different studs on opposite sides of partitions.

H. Provide framing and blocking for support at openings and cutouts.

I. Form control joints and expansion joints to receive trim accessories. Locate these joints to comply with manufacturer's instructions.

J. Cover both faces of partition framing with gypsum board in concealed spaces, except in chase walls which are braced internally.

1. Except for sound or fire rated applications, scraps of not less than 8 sq. ft. area may be used where concealed.

2. Fit gypsum board around ducts, pipes and conduit.

K. Isolate perimeter of non-load-bearing partitions from the structure. Provide 1/4" to 1/2" space and trim edge with J-type edge trim. Seal joints with acoustical sealant.

L. Seal sound-rated drywall and other drywall work refer to drawings with acoustical sealant to comply with ASTM C 919.

M. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations.

N. Grout hollow metal frames. Except where full grouting is required for fire-resistance rating, grout 6" lengths at each anchorage.

O. Laminate gypsum board to existing surfaces where indicated, to comply with the gypsum board manufacturer's recommendations.

3.6 SINGLE-LAYER APPLICATION

A. On ceilings apply gypsum board prior to wall and partition board application to the greatest extent possible.

B. On partitions and walls apply gypsum board vertically, and provide sheet lengths which will minimize end joints.

C. On Z-furring members apply gypsum board vertically (parallel) with no end joints. Locate edge joints over furring members.

3.7 DOUBLE-LAYER APPLICATION

A. General: Install gypsum backing board for base layer and exposed gypsum board for face layer. Fasten base and face layers separately.

B. On ceilings apply base layer prior to base layer on walls; apply face layers in same sequence. Offset joints between layers at least 10". Apply base layers at right angles to supports.

C. On partitions and walls apply base layer and face layers vertically, (parallel) with joints of base layer over supports and face layer joints offset at least 10" with base layer joints.

D. On Z-furring members apply base layer and face layer vertically, with vertical joints offset at least one furring member. Locate edges of base layer over furring members.

3.8 INSTALLATION OF DRYWALL TRIM

A. General: Where feasible, use the same fasteners to anchor trim as required to fasten gypsum board. Fasten flanges of trim in accordance with manufacturer's instructions. Closely fit and align ends of trim.

B. Install metal corner beads at external corners of drywall work.

C. Install edge trim at exposed or semi-exposed edges of drywall. Install L-type trim where work abuts other work, and where edge is exposed, revealed, gasketed, or sealant-filled.

D. Install metal control joints (beaded-type) and reveal trims where indicated.

3.9 FINISHING OF DRYWALL AND SHEATHING

A. General: Treat gypsum board joints, trim accessories, penetrations, fastener heads, surface defects and elsewhere as required for applied finishes. Prefill open joints using proper compound.

1. Apply specified joint tape between boards, except at trim.

2. Apply joint compound in 3 coats, not including prefill in joints, and sand (polish) between last 2 coats and after last coat.

B. Water-Resistant, Sheathing and Tile Backer Boards: Treat joints and fasteners to comply with directions of backer board, sheathing and water-resistant joint compound manufacturer, using water-resistant joint compound. Do not crown the joints. Embed woven glass type tape in joints and form true angles.

C. Partial Finishing: Omit third coat and sanding on concealed drywall work which requires finishing to achieve fire-resistance rating, sound rating, or to act as an air or smoke barrier.

D. Skim Coat Finishing: After joints of sheathing surfaces have been properly treated and prepared, apply an application of the same type joint compound over all surfaces of the gypsum sheathing. Sand smooth and make sure no crowns, dimples or similar imperfections remain.

3.10 PROTECTION OF WORK

A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.

END OF SECTION

SECTION 09300 - TILE

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide tile in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Unglazed ceramic floor tiles and trims.

2. Glazed ceramic wall tiles and trims.

3. Stone thresholds.

4. Setting and grouting materials.

5. Thinset waterproofing materials.

6. Lead shower pans.

7. Precast terrazzo shower receptors.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete.
2. Section 07900 - Joint Sealants.
3. Section 09255 - Gypsum Board Assemblies.
4. Section 10800 - Toilet and Bath Accessories.
5. Divisions 15 - Mechanical Work.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of product specified.

B. Shop Drawings: Submit shop drawings indicating tile patterns and locations and widths of control joints in tile surfaces.

1. Indicate lead shower pan flashing assemblies, including their interface with adjoining thin-set waterproofing systems, integral floor drains and other related conditions.

C. Samples for Initial Selection: Submit actual tiles showing full range of colors, textures, and patterns available. Include samples of grout.

D. Samples for Verification: Submit the following:

1. Samples for each type of tile and for each color and texture required, at least 12 inches square, mounted and grouted.

2. Full-size units of each type of trim and accessory material for each color required.

3. Stone thresholds in 6-inch lengths.

4. Typical lead sheet seaming detail for shower pans.

5. 6 inch square samples of the precast terrazzo shower receptors of color and aggregate.

E. Certificates: Submit master grade certificates for each shipment and type of tile, signed by tile manufacturer and Installer.

F. Reports: Submit material test reports from qualified independent testing laboratory to show compliance of tile and tile setting and grouting products with requirements indicated.

G. Field-Constructed Mock-Up: Before installing tile work, erect mock-ups for each form of construction and finish required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mock-ups to comply with the following requirements, using materials indicated for final unit of Work.

1. Locate mock-ups on site in location and size indicated or, if not indicated, directed by Architect.

2. Erect mock-ups in presence of Architect.

3. Demonstrate the proposed range of aesthetic effects and workmanship. Incorporate specified primary and secondary materials into mock-ups.

4. Obtain Architect's acceptance of mock-ups before start of final unit of work.

5. Retain and maintain mock-ups during construction in undisturbed condition as a standard for judging completed unit of Work.

   a. When directed, demolish and remove mock-ups from Project site.

1.3 QUALITY ASSURANCE

A. Source of Materials: Obtain each kind of material from a single source, for ceramic tile, setting materials and grout.

B. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project, for at least 5 years.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F or more in ceramic tiled areas during installation and for 7 days after completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements provide ceramic tile products as manufactured by Dal-Tile Corp., or approved equal.

2.2 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for "Standard Grade" requirements unless otherwise indicated.

B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with materials for setting and grouting.

C. Colors, Textures, and Patterns: Provide tile, grout, and other products of colors, surface textures and other appearance characteristics as selected by the Architect from manufacturer's standard range.

D. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer and as recommended by the manufacturer for installation in wet areas.

2.3 TILE PRODUCTS

A. Unglazed Ceramic Mosaic Floor Tile: Provide flat tile, of porcelain, of 2" x 2" size, 1/4" thick, with cushion edges; colors as scheduled; if not scheduled as selected by the Architect from the manufacturers full product line.

B. Glazed Ceramic Wall Tile: Provide flat tile, of 4-1/4 inch by 4-1/4 inch by 1/4 inch thick, with cushion edges. Provide tiles with manufacturer's glazed finish, unless otherwise indicated. Colors as scheduled; if not scheduled as selected by the Architect from the manufacturers full product line.

C. Trim Units: Provide cove base and other special shape trim tile units matching adjoining flat tile and coordinated with sizes and coursing of adjoining flat tile where applicable, and of standard shapes to suit conditions of installation.

1. Provide coved units at junction of floor and wall.

2.4 STONE THRESHOLDS

A. General: Provide stone that is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor.

B. Marble Thresholds: Provide marble thresholds complying with ASTM C 503 requirements for exterior use and for abrasion resistance where exposed to foot traffic, a minimum hardness of 10 per ASTM C 241.

1. Provide white, honed marble complying with MIA Group "A" requirements for soundness, unless otherwise indicated.

2.5 WATERPROOFING FOR THINSET TILE APPLICATIONS

A. Latex Rubber Waterproofing: Manufacturer's standard factory- prepackaged, job-mixed, proprietary two-part formulation consisting of liquid latex rubber and powder for trowel application and glass fiber fabric reinforcing.

1. Products: Subject to compliance with requirements, provide "Laticrete 301/335 Waterproof Membrane"; Laticrete International Inc.

2.6 SETTING MATERIALS

A. Latex-Portland Cement Mortar: Latex-modified portland cement mortar complying with ANSI A118.4.

1. Products: Subject to compliance with requirements, provide "4237 Latex Thin-Set Mortar Additive/211 Crete Filler Powder" as manufactured by Laticrete International, Inc., or approved equal.

a. Mortar Color: Provide white setting mortars for light tile installations, as directed by the Architect.

2.7 LEAD SHOWER PANS

A. Lead Shower Pans/Flashings: Provide lead sheet complying with ASTM B 749, Type L51121, copper-bearing lead sheet, with a minimum thickness of 0.0625 inch except not less than 0.0937 inch thick for applications where burning (welding) is involved.

B. Burning Rod for Lead: Same composition as lead sheet.

2.8 PRECAST TERRAZZO SHOWER RECEPTORS

A. Precast Shower Receptors: Provide the manufacturer's standard 3000 psi precast terrazzo shower receptors, 36 inch square, with stainless steel entry cap and drain assembly.

1. Refer to "Division 15 - Mechanical Work" for darinage tie-ins and related hook-ups.

B. Selected Product: Provide precast shower receptors "Model #WTR-4990" as manufactured by Fiat Products.

2.9 GROUTING MATERIALS

A. Latex-Portland Cement Grout: ANSI A118.6, color as selected by Architect, with "Laticrete 3701" by Laticrete International, Inc. latex additive added at job site with dry grout mixture.

1. Provide grout colors as selected by Architect.

2.10 MISCELLANEOUS MATERIALS

A. Tile Cleaner: Product specifically acceptable to tile and grout manufacturer, as recommended by National Tile Promotion Federation, 112 North Alfred St., Alexandria, VA 22134 or Ceramic Tile Institute, 700 N. Virgil Ave., Los Angeles, CA 90029.

B. Patching Compounds: Provide latex-type floor patching and leveling compounds, capable of feather edge installation. Patching compunds shall be of the type recommended by the thin-set materials manufacturer, and approved by the Architect.

2.11 MORTAR AND GROUT MIXTURES

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers for accurate proportioning of materials and mixing procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics.

1. Provide grout colors, as selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas where tile will be installed, for compliance with requirements for proper installation. Proceed with installation after unsatisfactory conditions have been corrected.

1. Patch and level concrete substrates of all thin-set tile installations; patching and leveling shall be in accordance with the reccommendations of the thin-set manufacturer, and acceptable to the Architect.

3.2 PREPARATION

A. Blending: For tile with color variations, verify that tile has been blended in factory and packaged accordingly. If not factory blended, return to manufacturer.

B. Prior to installation of tiles, check tiles for flatness. If any tiles are found to be warped, tiles shall be rejected and provided with new tiles.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with applicable parts of ANSI A108 series of standards included under "American National Standard Specifications for the Installation of Ceramic Tile".

B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.

C. Extent: Extend tile into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Fitting: Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind exposed cut edges of tile for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.

1. Refer to Architectural Drawings for starting points. Prior to commencement of work review all installation conditions with Architect.

E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.

1. Make joints between mounted tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent.

F. Expansion Joints: Locate expansion joints and other sealant-filled joints where indicated. Do not saw cut joints.

G. Grout: Grout tile to comply with the following standards:

1. For latex-portland cement grout, comply with ANSI A108.10.

H. Lead Shower Pans/Flashings: Fabricate and install lead shower pan assemblies from specified sheet lead materials weighing not less than 4.0 lb/sq. ft., and be of hard tempered, unless otherwise indicated.

1. Lead shower pans shall be fabricated of a single sheet, unless otherwise indicated. Where pan sheet sizes exceed market available sizes provide burned seams between adjacent sheets which are watertight and fabricated in compliance with the lead manufacturer's recommendation and the Sheet Metal and Air Conditioning Contractor's National Association (SMACNA).

3.4 THINSET WATERPROOFING FOR FLOOR TILE

A. Install waterproofing in compliance with waterproofing manufacturer's instructions to produce a waterproof membrane of uniform thickness bonded securely to substrate.

B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 FLOOR INSTALLATION METHODS

A. Floor Tile: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction, and grout types:

1. Latex-Portland Cement Mortar: ANSI A108.5; for ceramic and quarry tile floors unless otherwise indicated.

   a. Waterproof Membrane (Thin-Set), Interior: TCA F122-97; at wet locations as directed by the Architect.

   b. Grout: Latex portland cement.

B. Stone Thresholds: TCA TR611-97; install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile.

1. Set thresholds in latex-portland cement mortar where mortar bed would otherwise be exposed above adjacent nontile floor finish.

3.6 WALL TILE INSTALLATION METHODS

A. Install types of wall tile designated to comply with requirements indicated below for setting-bed methods, and TCA installation methods related to subsurface and grout.

B. Latex-Portland Cement Mortar: ANSI A108.5.

1. Gypsum Board, Latex Portland Cement Mortar, Interior: TCA W243-97.

2. Cement Backer Board/Underlayment, Latex Portland Cement Mortar, Interior TCA W244-97.

3. Grout: Latex-portland cement.

3.7 SHOWER RECEPTORS

A. Shower Receptors: Install tile in shower locations to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction, and grout types:

1. Portland Cement Mortar: ANSI A108.1 and A108.5; for ceramic floors unless otherwise indicated.

a. Portland Cement Mortar(Reinforced), Interior: TCA B415-97; at all shower locations, unless otherwise indicated. Shower pan flashing shall be sheet lead, as specified.

b. Grout: Latex-portland cement.

3.8 CLEANING AND PROTECTION

A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.

2. Unglazed and unpolished tiles may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal, wood and plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.

C. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile.

D. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

E. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.8 TILE SCHEDULE

A. General: Provide the following tiles and trims as indicated on the drawings and schedules.

1. T-1:

Manufacturer	:	Dal-Tile.
Description	:	Unglazed ceramic floor tile.
Size	:	2" x 2"
Model	:	#DK-325.
Color	:	Marble.

2. T-2:

Manufacturer	:	Dal-Tile.
Description	:	Glazed ceramic wall tile.
Size	:	4-1/4" x 4-1/4".
Model	:	D-135.
Color	:	Almond.

END OF SECTION

SECTION 09511 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide acoustical ceilings in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Acoustical panel-type ceilings, as indicated.

2. Acoustical tile-type ceilings, as indicated.

3. Open metal grid-type ceiling system, as indicated.

4. Decorative suspension systems.

5. Acoustical insulation, attachment devices, concealed suspension systems and similar accessories.

B. Related Sections

1. Section 02070 - Selective Demolition.
2. Section 07900 - Joint Sealants.
3. Section 09250 - Gypsum Board Assemblies.
4. Section 09515 - Metal Ceilings.
5. Section 09525 - Fiberglass Composite Ceilings.
6. Division 15 and 16 - Mechanical and Electrical.

1.2 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical ceilings similar in material, design, and extent to those indicated for Project.

B. Single-Source Responsibility: Obtain each type of acoustical ceiling unit and suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

C. Coordination of Work: Coordinate layout and installation of acoustic ceiling units and suspension systems components with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, partition system and fire suppression system components.

D. Fire Performance Characteristics: Provide acoustical units with the following fire performance characteristics. Identify acoustical ceiling components with appropriate marking of applicable testing and inspecting agency.

1. Surface Burning Characteristics: As follows, tested per ASTM E 84.

a. Flame Spread: 25 or less.

b. Smoke Developed: 50 or less.

1.3 SUBMITTALS

A. Samples For Verification: Submit full size samples of each ceiling tile/panel, exposed suspension member, and accessories required.

1. Acoustical Ceiling Panels and Tiles: Submit full size sample of each type of acoustical ceiling panel unit specified. Samples shall show the full range of exposed colors, textures and finishes to be expected in the completed work.

2. Decorative Open Metal Grid Assemblies: Submit full size samples of each type of decorative metal grid component unit specified. Samples shall show the full range of exposed colors, textures and finishes to be expected in the completed work.

3. Submit one full size sample of each installation accessory required, including but not limited to acoustical insulation, reveal and edge moldings, anchorages, concealed suspension components, sealants and stick-clips.

B. Shop Drawings: Submit details and reflected ceiling plans of acoustical ceilings. Coordinated with mechanical, electrical and other work related to acoustical panel ceiling. Show suspension system and anchorage methods.

C. Manufacturer's Data: Submit manufacturer's specifications and installation instructions for each acoustical material, suspension system and other products required, including certified laboratory test reports and other data as may be required to show compliance with the Documents.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.5 EXTRA MATERIALS

A. General: Deliver extra materials to Owner. Furnish extra materials described below that match products installed, and are packaged with protective covering for storage, and are identified with appropriate labels.

1. Acoustical Ceiling Tile and Panel Units: Furnish quantity of full-size units equal to 2.0 percent of amount installed.

2. Decorative Open Grid System Components: Furnish quantity of each component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Available Manufacturer: Subject to compliance with requirements provide acoustical ceiling systems as manufactured by one of the following:

1. Armstrong World Industries.
2. USG Interiors.
3. Celotex

B. Acoustical Panel System: Provide wet-formed mineral fiber acoustical ceiling panel system, with a vinyl-latex paint system, 24" x 24" x 3/4" thick, for exposed spline suspension system complying with ASTM E 1264, Type IV, Form 2 CAC range of 35 in compliance with ASTM E 413; NRC range of 0.70 in compliance with ASTM C 423; light reflectance of 0.79 and as follows:

1. Selected Product: Provide Armstrong's "Hi-LR Ultima RH90"; model #1792, unless otherwise selected by the Architect; white; with hardware friendly options and a beveled tegular edge for lay-in application.

C. Acoustical Tile System: Provide wet-formed mineral fiber acoustical ceiling tile system, with a vinyl latex factory applied paint finish, 12" x 12" x 3/4" thick, for concealed spline suspension system complying with ASTM E 1264, Type III, Form 1 CAC range of 35 in compliance with ASTM E 413; NRC range of 0.65 in compliance with ASTM C 423; light reflectance of 0.83 and as follows:

1. Selected Product: Provide Armstrong's "Concealed Cirrus Tile"; model #580; white; with hardware friendly options and beveled edges for concealed spline application.

D. Acoustical Panel System: Provide ceramic and mineral fiber composite acoustical ceiling panel system, with a scrubbable vinyl-latex paint system, 24" x 24" x 5/8" thick, for exposed spline suspension system complying with ASTM E 1264, Type/Form XX; CAC range of 40 in compliance with ASTM E 413; NRC range of 0.55 in compliance with ASTM C 423; light reflectance of 0.80 and as follows:

1. Selected Product: Provide Armstrong's "Ceramaguard RH100 - Travertine Ceramaguard"; model #601, unless otherwise selected by the Architect; white; with hardware friendly options and a square edge for lay-in application.

2.2 METAL SUSPENSION SYSTEMS, GENERAL

A. Standard for Metal Suspension Systems: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.

B. Finishes and Colors: Unless otherwise indicated, provide manufacturer's standard factory-applied finish for type of system indicated.

C. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

D. Cast-In-Place and Postinstalled Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials, with holes or loops for attachment of hangers of type indicated and with capability to sustain, without failure, a load equal to 5 times that imposed by ceiling construction, as determined by testing per ASTM E 488, conducted by a qualified independent testing laboratory.

E. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion- resistant materials, with clips or other accessory devices for attachment of hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing laboratory.

F. Hangers: Mild steel rods or flats, zinc coated, or protected with rust-inhibitive paint.

G. Angle Hangers: Angles with legs not less than 7/8 inch wide, formed with 0.0365-inch-thick galvanized steel sheet complying with ASTM A 446, Coating Designation G90, with bolted connections and 5/16-inch-diameter bolts.

H. Edge Moldings and Trim: Metal of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.

1. Powder-Actuated Fasteners in Concrete over Metal Decking: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attachment of hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing laboratory and approved for use in New York City.

2.3 NON-FIRE-RESISTANCE RATED DOUBLE WEB EXPOSED SUSPENSION SYSTEM

A. Double Web Exposed Steel Suspension System: Main and cross-runners, roll formed from or electrolytic zinc-coated cold rolled steel sheet, pre-finished metal flanges; other characteristics as follows:

1. Structural Classification: Intermediate-Duty System.

2. Edge Condition of Cross Runners: As selected by Architect.

3. Cap Material and Finish: Steel sheet painted to match color indicated by reference to manufacturer's standard color designations.

4. Selected Products: Provide the following suspension systems for the specified acoustical ceiling assemblies.

   a. Acoustical Panel Ceilings, General: Provide "Silhouette" (9/16 inch - Slotted) suspension systems as manufactured by Armstrong World Industries, or approved equal.

   b. Acoustical Panel Ceilings, Wet Areas: Provide "Prelude Plus" (15/16 inch Environmental Grid) suspension systems as manufactured by Armstrong World Industries, or approved equal.

   c. Acoustical Tile Ceilings: Provide "Prelude Concealed Tee System" suspension systems as manufactured by Armstrong World Industries, or approved equal.

2.4 DECORATIVE OPEN GRID CEILING SYSTEM

A. General: Manufacturer's standard double web exposed steel suspension system complete with main and cross-runners, roll formed from or electrolytic zinc-coated cold rolled steel sheet, pre-finished metal flanges; and punched only in locations required for the intended installation.

1. Structural Classification: Intermediate-Duty System.

2. Cap Material and Finish: Steel sheet painted to match color indicated by reference to manufacturer's standard color designations.

3. Selected Products: Provide "GridWare" decorative open grid ceiling system as manufactured by USG Interiors, or approved equal.

   a. Profile Width: 15/16", unless otherwise indicated.

   b. Pattern: "GWDX", unless otherwise indicated on the drawings.

2.5 MISCELLANEOUS MATERIALS

A. Acoustical Sealant: Nondrying, non-hardening, non-skinning, non-staining, non-bleeding, gunnable sealant complying with requirements specified in Division 7 - Joint Sealers.

B. Acoustical Insulation: Provide rigid fiberglass board type acoustical insulation of the thickness indicated. Provide "Permacote Linacoustic R-300" as manufactured by Schuller International, Inc., or approved equal.

1. Provide adhesives, stick-clips and other fastening devices recommended by the insulation manufacturer to properly install the acoustic insulation to the substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and structural framing to which ceiling system attaches or abuts, with Installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half-width units at borders, and comply with reflected ceiling plans.

3.3 INSTALLATION, GENERAL

A. General: Install acoustical ceiling systems to comply with installation standard below per manufacturer's instructions and CISCA "Ceiling Systems Handbook."

1. Standard for Installation of Ceiling Suspension Systems: Comply with ASTM C 636.

B. Arrange acoustical units and orient directionally patterned units (if any) in manner shown by reflected ceiling plans and as selected by the Architect.

C. Suspend ceiling hangers from building structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

3. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eyescrews, or other devices that are secure and appropriate for structure to which hangers are attached as well as for type of hanger involved, and in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

4. Do not support ceilings directly from permanent metal forms.

5. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.

D. Install rigid acoustical insulation of type indicated over the entire concrete deck directly above the open grid ceiling system, and other locations indicated. Theat edges as per the manufacturers recommendations.

E. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.

1. Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing mouldings.

2. Screw attach mouldings to substrates at intervals not more than 16" o.c. and not more than 8" from ends, leveling with suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.

E. Install ceiling units in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

1. For acoustical ceiling panels (at perimeter) which when scribed from a 24" x 24" panel would result in a 4 inch or smaller dimension, provide 24" x 48" acoustical units matching the specified product; scribed to fit as acceptable to the Architect.

F. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material.

1. Fit adjoining tile to form flush, tight joints. Scribe and cut tile for accurate fit at borders and around penetrations through tile.

2. Hold tile field in compression by inserting leaf-type, spring-steel spacers between tile and moldings, spaced 12 inches o.c.

3. Fabricate access units for special suspension system access members and tile units modified as required to allow for removal of access units.

4. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

G. Install acoustical units with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. Arrange directionally patterned acoustical units as follows:

   a. As selected by the Architect.

2. For square-edged units, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.

3. For tegular-edged units on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.

4. For tegular-edged units on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.

5. Paint cut panel edges remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

6. Istall hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated or required.

7. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 CLEANING

A. Clean exposed surfaces of acoustical ceilings and grid assemblies, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09511 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide acoustical ceilings in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Acoustical panel-type ceilings, as indicated.

2. Acoustical tile-type ceilings, as indicated.

3. Open metal grid-type ceiling system, as indicated.

4. Decorative suspension systems.

5. Acoustical insulation, attachment devices, concealed suspension systems and similar accessories.

B. Related Sections

1. Section 02070 - Selective Demolition.
2. Section 07900 - Joint Sealants.
3. Section 09250 - Gypsum Board Assemblies.
4. Section 09515 - Metal Ceilings.
5. Section 09525 - Fiberglass Composite Ceilings.
6. Section 09900 - Painting.
7. Division 15 and 16 - Mechanical and Electrical.

1.2 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical ceilings similar in material, design, and extent to those indicated for Project.

B. Single-Source Responsibility: Obtain each type of acoustical ceiling unit and suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

SECTION 09515 - METAL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide metal ceilings in accordance with The Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Perforated metal pan ceiling system, as indicated.

B. Related Sections

1. Section 07900 - Joint Sealers.
2. Section 09250 - Gypsum Board Assemblies.
3. Divisions 15 and 16 - Mechanical and Electrical Work. S

1.2 SUBMITTALS

A. Product data for each type of product specified.

B. Coordination drawings for reflected ceiling plans drawn accurately to scale and coordinating penetrations and ceiling-mounted items. Show the following:

1. Joint pattern.
2. Ceiling suspension members.
3. Method of attaching hangers to building structure.
4. Scale: 1/4 inch equals 1'-0".
5. Ceiling-mounted items including light fixtures; air outlets and inlets; speakers; sprinkler heads; access panels; and special moldings at walls, column penetrations, and other junctures with adjoining construction.

C. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual acoustical snap-in metal pan units or sections of units showing full range of colors, textures, and patterns available for each type of unit indicated.

D. Samples for verification purposes of each type of exposed finish required, prepared on samples of size indicated below and of same thickness and material indicated for final unit of Work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.

1. Submit full size samples of metal pan unit in pattern and finish required.

2. 12-inch-long samples of each exposed molding.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical metal pan ceiling installations similar in material, design, and extent to that indicated for Project.

B. Fire Performance Characteristics: Provide acoustical snap-in metal pan units with surface burning characteristics indicated below, as determined by testing assembled materials composed of metal pans and sound absorption pads identical to those required in this section, per ASTM E 84, by a testing organization acceptable to authorities having jurisdiction.

1. Flame Spread: 25 or less.

2. Smoke Developed: 50 or less.

C. Single-Source Responsibility: Obtain each type of acoustical metal pan ceiling system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

D. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition system (if any).

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical metal pan units to Project site in manufacturer's original unopened packages, fully identified with type, finish, performance data, and compliance labels. Handle and store in compliance with manufacturer's instructions and recommendations.

B. Before installing ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle ceiling units carefully to avoid denting, or abrading surfaces and edges or damaging units in any way.

1.5 PROJECT CONDITIONS

A. Environmental Conditions: Do not install interior acoustical metal pan ceilings until space is enclosed and weatherproof and until wet work in space is completed and nominally dry.

1.6 MOCK-UP

A. Provide all items required for an in-place mock-up of the metal pan ceiling system in the location indicated on the drawings or as later designated by the Architect. Accepted mock-up will be used as a standard of quality for this work and may be incorporated in the work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide acoustical metal pan ceilings of one of the following:

1. Armstrong World Industries
2. Simplex
3. Or approved equal

2.2 ACOUSTICAL METAL PAN CEILING SYSTEMS, GENERAL

A. Standard for Metal Pan Acoustical Ceiling Units: Provide units of configuration indicated that comply with ASTM E 1264 classifications as designated by reference to types, acoustical ratings, and light reflectances, unless otherwise indicated.

B. Sheet Metal Characteristics: Form metal pans from sheet metals selected for their surface flatness, smoothness, and freedom from surface blemishes where exposed to view in the finished unit. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, variations in flatness exceeding those permitted by referenced standards for stretcher-leveled metal sheet, stains, discolorations, or other imperfections.

C. Fabrication: Die-form acoustical metal pans from metal indicated into units of size indicated and configuration standard with manufacturer, with either dimples, continuous beads, or spring clips on flanges for engagement with concealed suspension system, and finished to comply with requirements indicated under "Finishes" article.

D. Patterns: Provide acoustical metal pan units with perforations and borders as selected by the Architect, from the manufacturer's full product line.

E. Sound-Absorptive Pads: For perforated acoustical snap-in metal units, provide sound-absorptive pads of width and length to fill completely the inside of each acoustical unit and to comply with the following requirements:

1. Plastic Sheet-Wrapped Mineral Fiber Insulation: Pads consisting of nonrigid vinyl chloride plastic sheet encapsulating unfaced mineral fiber insulation complying with ASTM C 553 for 3/4 pcf density, for installation over metal spacer grid to separate pad from pan; and as follows:

   a. Plastic Sheet Thickness/Color: 0.003 inches/flat black.

   b. Mineral Fiber Type/Thickness: Glass fiber/1-1/2 inches.

2. Spacer Grid Metal: Aluminum.

2.3 ACOUSTICAL METAL PANS

A. Aluminum Pans: Die-formed from aluminum sheet complying with ASTM B 209 and the following requirements:

1. Alloy and Temper for Baked Enamel Finish: 3003-H14 or 3105-H14, as standard with manufacturer.

2. Minimum Nominal Thickness: 20 gage.

3. Pattern: As selected by the Architect.

4. Light Reflectance Coefficient: LR 0.70.

5. Stiffener Core: Corrugated 0.040-inch-thick perforated aluminum sheet units designed to snap into pans for added rigidity of units.

6. Noise Reduction Coefficient: NRC 0.85.

7. Ceiling Attenuation Class: CAC 10, minimum, with fiberglass infill:

8. Size: 24 inches by 24 inches by 7/8 inch thick.

9. Edge Detail: 90° reveal edges with concealed access kerfs and reverse tegular edges.

2.4 SUSPENSION SYSTEMS, GENERAL

A. Standard for Metal Suspension Systems: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements and New York City Building Code requirements..

B. Finishes and Colors: Unless otherwise indicated, provide manufacturer's standard factory-applied finish for type of system indicated.

C. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

1. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion- resistant materials, with clips or other accessory devices for attachment of hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing laboratory.

2. Powder-Actuated Fasteners in Concrete over Metal Decking: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attachment of hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing laboratory and approved for use in New York City.

D. Hangers: Mild steel rods or flats, zinc coated, or protected with rust-inhibitive paint.

E. Angle Hangers: Angles with legs not less than 7/8 inch wide, formed with 0.0365-inch-thick galvanized steel sheet complying with ASTM A 446, Coating Designation G90, with bolted connections and 5/16-inch-diameter bolts.

F. Edge Moldings and Trim: Provide shadow edge molding unless otherwise indicated and for edges and penetrations that fit type of edge detail and suspension system indicated.

2.5 MISCELLANEOUS COMPONENTS AND MATERIALS

A. Exposed Trim: Provide exposed members as indicated or required for edges of ceiling, fixture trim, beams, fascias at changes in ceiling height and other conditions, of metal and finish matching snap-in metal ceiling units.

B. Concealed Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant complying with requirement specified in Division 7 Section "Joint Sealers."

2.6 FINISHES, GENERAL

A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes for acoustical snap-in metal pan units and exposed trim.

B. Protect mechanical finishes on exposed surfaces from damage by application of strippable, temporary protective covering before shipment.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent ceiling units are not acceptable if they are within 1/2 of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved samples and they are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

B. Baked Enamel Finish: AA-C12C42R1x; Organic Coating: as specified below. Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.

1. Organic Coating: Manufacturer's standard thermosetting modified acrylic enamel primer/topcoat system, with 2 coats on exposed face, 1 coat on concealed surfaces.

2. Color: White as selected by Architect from manufacturer's standard choices for color and gloss.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and structural framing to which ceiling system attaches or abuts, with Installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

B. Measure each ceiling area and establish layout of snap-in metal pan units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half-width units at borders, and comply with reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical metal pan ceiling systems in accordance with manufacturer's instructions and CISCA "Ceiling Systems Handbook" to comply with requirements indicated.

B. Standard for Installation of Ceiling Suspension Systems: Comply with ASTM C 636 as applicable to acoustical snap-in metal pan ceilings.

C. Suspend ceiling hangers from building structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

3. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eyescrews, or other devices that are secure and appropriate for structure to which hangers are attached as well as for type of hanger involved, and in a manner that will not cause them to deteriorate or fail because of age, corrosion, and elevated temperatures.

4. Do not attach hangers to steel deck tabs.

5. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.

D. Install edge moldings of type indicated at edges of each metal acoustical ceiling area and at locations where edge of units would otherwise be exposed after completion of work.

1. Sealant Bed: Apply continuous ribbon of acoustical sealant on back of vertical leg before fastening to vertical surface. Locate so that sealant will be concealed after installation.

2. Secure moldings to building construction by fastening through holes drilled in vertical leg. Space holes not more than 3 inches from each end and not more than 16 inches o.c. Draw up fasteners for tight set against vertical surfaces.

3. Miter corners of moldings accurately to provide hairline joints.

4. Level moldings with ceiling suspension system to level tolerance of 1/8 inch in 12'-0".

E. Scribe and cut metal acoustical units for accurate fit at borders and at interruptions and penetrations by other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet.

F. Install acoustical snap-in metal pan units in coordination with suspension system and exposed moldings.

1. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions, unless otherwise shown.

2. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.

3. Install directionally patterned or textured panels in directions indicated.

4. Install sound-absorptive pads in perforated metal pan units over metal spacer grids.

G. Install sound attenuation panels in areas indicated by reflected ceiling plans or room finish schedules. Lay panels directly on ceiling system in manner indicated, and close major openings to form complete coverage in required areas.

3.4 CLEANING

A. Clean exposed surfaces of acoustical snap-in metal pan ceiling including trim and edge moldings. Comply with manufacturers' instructions for cleaning and touchup of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented and bent units.

3.5 METAL PAN CEILING SCHEDULE

A. General: Provide the following resilient flooring materials as indicated on the drawings and schedules.

1. C-2

Manufacturer:	Armstrong World Industries
Description:	Snap-in perforated metal ceiling system.
Size:	24" x 24" x 7/8" thick.
Model:	Cassettes.
Pattern:	As selected by the Architect.
Color:	White.

END OF SECTION

SECTION 09520 - FABRIC WRAPPED PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide fabric wrapped panels in accordance with the Contract Documents. The Work of this Section includes, but is not necessarily limited to, the following:

1. Fabric wrapped wall panel systems, as indicated.

B. Related Sections

1. Section 09250 - Gypsum Board Assemblies.
2. Section 09950 - Wall Coverings.

1.2 QUALITY ASSURANCE

A. Fabricator Qualifications: Fabricator shall be a firm with at least 5 years of successful experience in fabricating fabric panel systems of the type and quality required for this Project.

B. Installer Qualifications: Installer shall be a firm licensed or approved by the fabricator to install his products and who shall also have at least 5 years of successful experience installing fabric panel systems of the type and quality required for this work.

C. Fire Performance Characteristics: Provide panels and fabrics with surface-burning characteristics of Class "A", which have been determined by testing assemblies of identical materials and construction according to ASTM E 84 by a testing organization acceptable to authorities having jurisdiction.

D. Mock-Up: Prior to installation of each type of fabric wall panel, provide an on-site mock-up where directed by Architect which, upon approval, may be included in the work.

1.3 SUBMITTALS

A. Product Data: Submit manufacturers material specifications and installation instructions. Include instructions for handling, storage, protection, and maintenance.

1. Submit certificate indicating that panel assemblies provided comply with requirements indicated for fire performance characteristics.

2. Submit test data from an independent testing agency, acceptable to authorities having jurisdiction, evidencing that panel assemblies comply with requirements indicated for fire performance characteristics.

B. Shop Drawings: Submit shop drawings indicating layout field measurements, joints, seaming, fabric orientation and fastening systems as follows:

1. Concealed, back-mounted, system for attachment of wall panels.

C. Samples

1. Submit three 12" x 12" samples of type of panel required, covered in representative fabric.

2. Submit samples of all attachment devices and accessories.

D. Warranty: Submit a warranty that the fabric panels will show no signs of warping or distortion for a period of one (3) years from the date of final acceptance.

1.4 PROJECT CONDITIONS

A. Place fabric in installation room for at least one week before installation.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering acoustical wall panel systems which may be incorporated include the following:

1. Track-Tex, a Div. of DFB Sales .
2. Corporate Acoustics, Inc.
3. StretchWall Products, Inc.

2.2 MATERIALS

A. Acoustic Wall Panels: Acoustic Wall Panels: Manufacturer's standard panel construction consisting of a core of rigid glass fiberboard with a nominal density of 6 to 8 lbs. per cu. ft. or low density mineral fiberboard, complying with the following requirements:

1. Thickness/NRC: Nominal overall panel thickness and NRC rating as scheduled.

2. Panel Size: As indicated in the drawings and fabricated to meet field conditions.

3. Edges: Manufacturer's standard reinforced edge for resistance to warpage and damage. Edges are hard square unless otherwise indicated.

    a. Provide rigid P.V.C. extrusion with flexible hinge.

4. Wall Mounting Accessories: Manufacturer's recommended concealed system for securely mounting wall panels of type and size indicated to substrates, meeting requirements and acceptable to the Architect.

2.3 FABRICATION, GENERAL

A. General: Fabricate acoustical wall covering system to the sizes and profiles indicated on the drawings.

B. Table square fabric prior to cutting. Cut fabric by thread or by pattern. Layout and stitch fabric panels together so that panels are uniform in width within a on a wall surface.

C. Sew seams straight and parallel with each other and other vertical lines adjacent to the panel surface. Pressed seams flat into open position, or frenched, as required.

D. Mount fabric to panels with sufficient tension to eliminate sagging, rippling, denting or fabric distortion.

E. Fabricate fabric sections with cutouts including but not limited to wall switches, electrical outlets, thermostats, light fixtures and sprinkler heads. Unless otherwise indicated install fabrics within cut-out shapes so that all cut edges are wrapped.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the adjoining construction with the conditions under which the work is to be installed. Proceed with the work after unsatisfactory conditions have been corrected.

B. Verify all measurements in the field before proceeding.

3.2 INSTALLATION, GENERAL

A. Apply the "z"-clip members with the manufacturers recommended mounting devices to the surfaces to be treated. Secure with a fastening system appropriate for the substrate.

1. Fasteners shall be placed at intervals recommended by the manufacturer.

B. Ensure that the mounting system is plumb and straight, flush, and improper alignment. Ensure that mounting device details or coloration will not be visible through the facing fabric when installed.

C. Install the core material appropriate to the installation flush with the mounting system and secure with an appropriate fastening method.

D. Cut the fabric from each roll or bolt while maintaining a regular sequence of drops and matching weave direction for a uniform finished appearance. Ensure that patterned goods are joined at seams consistent with repeats.

E. Apply the fabric and secure with the mounting device channels using a hand tool appropriate for the joint condition and the nature of th fabric. Ensure that the fabric surface is free of wrinkles and that the weave is plumb and straight and properly aligned horizontally and vertically.

1. No stapling or gluing of fabric to core will be permitted.

3.3 PANEL WRAPPED FABRIC SCHEDULE

A. General: Provide fabric wrapped wall panel systems as indicated of the drawings and schedules.

1. WP-1

Manufacturer : "Track-Tex" High Tension System.
Fabric : Matching WC-1; refer to Section 09950.
Color : #6320 - 104.
Backing : Manufacturer's standard light acrylic backing.

END OF SECTION

SECTION 09525 - FIBERGLASS COMPOSITE CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide fiberglass composite ceilings in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Factory applied textile wrapped composite ceiling panel assemblies, as indicated.

B. Related Sections

1. Section 09250 - Gypsum Board Assemblies.
2. Divisions 15 and 16 - Mechanical and Electrical Work.

1.2 QUALITY ASSURANCE

A. Fabricator Qualifications: Fabricator shall be a firm with at least 3 years of successful experience in fabricating fabric panel systems of the type and quality required for this Project.

1. Fabricate composite ceiling panels with finishes of a single dye lot.

B. Installer Qualifications: Installer shall be a firm licensed or approved by the fabricator to install his products and who shall also have at least 3 years of successful experience installing composite panel systems of the type and quality required for this work.

C. Fire Performance Characteristics: Provide panels and fabrics with surface-burning characteristics of Class "A", which have been determined by testing assemblies of identical materials and construction according to ASTM E 84 by a testing organization acceptable to authorities having jurisdiction.

D. Mock-Up: Prior to installation of each type of composite ceiling panels, provide an on-site mock-up where directed by Architect which, upon approval, may be included in the work.

1.3 SUBMITTALS

A. Product Data: Submit manufacturers material specifications and installation instructions. Include instructions for handling, storage, protection, and maintenance.

1. Submit certificate indicating that panel assemblies provided comply with requirements indicated for fire performance characteristics.

2. Submit test data from an independent testing agency, acceptable to authorities having jurisdiction, evidencing that panel assemblies comply with requirements indicated for fire performance characteristics.

B. Shop Drawings: Submit shop drawings indicating layout, joints, seaming, panel orientation and fastening systems. Include acoustical backing materials and direct attachment extrusion fastening system.

C. Samples

1. Submit three 12" x 12" samples of type of panel required, covered in representative finish.

2. Submit samples of all extrusions, clips, acoustical panel materials, attachment devices and accessories.

D. Warranty: Submit a warranty that the fiberglass composite ceilings will show no signs of warping, sagging, fraying, distortion or similar defects for a period of one (1) year from the date of final acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Available Manufacturer: Subject to compliance with requirements, provide composite fiberglass ceiling assemblies as manufactured by one of the following, or approved equal:

1. Deccoustics
2. Wall Technologies, Inc

2.2 MATERIALS

A. Ceiling Panels: Manufacturer's standard composite panel construction consisting of a core of rigid glass fiberboard with a nominal density of 6 to 7 lbs. per cu. ft., with an integral 1/8 inch thick sanded fiberglass facer and the manufacturer's porous textile material factory laminated to all exposed and semi-exposed surfaces.

1. Panel Size: As indicated in the drawings and fabricated to meet field conditions.

   a. Thickness: 1-1/8 inch thick.

2. Performance:

   a. Provide composite ceiling panel assemblies with an NRC rating of 0.95 as per ASTM C 423.

   b. Panels shall have a light reflectance rating of 0.82.

3. Edges: Manufacturer's standard reinforced edge for resistance to warpage and damage. Edges are hard square unless otherwise indicated.

   a. Provide rigid P.V.C. extrusion with flexible hinges.

4. Ceiling Mounting Accessories: Manufacturer's recommended concealed system for securely mounting ceiling panels of type and size indicated to substrates, meeting requirements and acceptable to the Architect.

2.3 FABRICATION - GENERAL

A. Fabricate panels to required sizes, with hard square edges except as otherwise indicated.

B. Factory bonded textile materials shall be upholstered directly to the panel face and returned at the edges to the back of the panel with wrinkle-free surface and tailored corners. Fabricate panels so that pattern/repeat is square within each panel and matches between adjacent panels; fabric seams as indicated.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the adjoining construction with the conditions under which the work is to be installed. Proceed with the work after unsatisfactory conditions have been corrected.

B. Verify all measurements in the field before proceeding.

3.2 INSTALLATION, GENERAL

A. Install ceiling panel system plumb, ceiling panel system level, in proper alignment and in strict accordance with manufacturer's instructions.

B. Coordinate installation with the work of other trades.

C. Provide all shimming necessary to achieve a plumb or level condition; zero tolerance will be acceptable.

D. Install specified system of concealed ceiling fastening to support the panel system. Face nailing shall not be permitted.

E. Remove and replace panels and trim which are damaged and are unacceptable to Architect.

3.3 FABRIC CEILING SCHEDULE

A. General: Provide the following fabric ceiling assemblies as indicated on the drawings and schedules

1. C-3:

Manufacturer	:	Decoustics.
Model/Color	:	As selected by the Architect.
Thickness	:	1-1/8 inch, unless otherwise indicated.
Description	:	Factory fabricated fiberglass composite ceiling panel system with a porous textile finish.
Finish	:	Matching the Architect's sample.

END OF SECTION

SECTION 09600 - INTERIOR STONEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide interior stonework in accordance with the Contract Documents. The Work of this Section generally includes but is not necessarily limited to the following:

1. Interior slate flooring and base trim, as indicated.

2. Setting and grouting materials, anchors and inserts and other installation accessories.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete.
2. Section 07900 - Joint Sealers.

1.2 QUALITY ASSURANCE

A. Single Source Responsibility

1. Obtain each color, grade, finish, type and variety of stone from a single source with resources to provide materials of consistent type, quality in appearance, and physical properties, including the capacity to cut and finish material without delaying the progress of the Work.

2. Obtain mortar ingredients of uniform quality and from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

B. Installer Qualifications: Engage an Installer who has successfully completed (3) three interior stonework projects similar in material, design and extent to that indicated for this project within the last (5) five years.

C. Field-Constructed Mock-Up: Prepare mock-ups for interior stonework for further verification of selections made for color and finish under sample submittals and establishing standard of quality for aesthetic effects expected in completed work. Prepare mock-ups as directed by the Architect and in compliance with the following requirements:

1. Locate mock-up on site where indicated or, if not indicated, as directed by Architect.

2. Before setting stone floor lay out in pattern indicated on the Drawings. Adjust stone as directed by the Architect; proceed with setting only with Architect's approval.

   a. Typical interior stone flooring, approximately 6'-0" square including base and other trims.

   b. Build mock-up with joints of minimum width.

3. Erect mock-ups in presence of Architect.

4. Retain mock-ups during construction as a standard for judging completed stonework. Mock-up may be installed in the work if acceptable to the Architect.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of stone, stonework accessory and other manufactured product specified.

B. Shop Drawings: Submit cutting and setting drawings indicating sizes, dimensions, sections and profiles of stone units, arrangement and provisions for jointing, supporting, anchoring and bonding stonework; and other details showing relationships with, attachment to, and reception of, related work.

1. Provide details for, and show location of, inserts for support of stone support system.

2. Make a submittal that shows the stonework, stonework support, stone anchors, and other adjacent work in schematic form, sealants and other related components. Assemble shop drawings of all components into this submittal and prepare coordination details and erection details for the stonework.

3. Shop drawings shall clearly show stone pattern, the identity and finish of stone, large size details and sections where stones abut other materials, dimensions, thicknesses, and special details.

4. Provide plans, elevations, sections and large scale details of all stone elements. Note location and details of joints including depth, width, grouting or sealing, and color.

5. Show direction of grain in stone indicating that stone is to be installed as accepted from site mock-up.

C. Samples: Submit sets of samples for each color, grade, finish, type and variety of stone consisting of units not less than 12" x 12" x thickness specified. Include 3 or more units in each set of samples showing the full range of appearance characteristics to be expected in completed work.

D. Certification: Submit written certification that stonework supplier complies with Article A.1. of "Quality Assurance".

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in undamaged condition.

B. Store and handle stone and related materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breakage, chipping, or other causes.

1. Do not use pinch, pry or wrecking bars.

2. Lift with wide-belt type slings where possible; do not use wire rope or ropes containing tar or other substances which might cause staining. If required for moving stone, use wood rollers with cushions at end of wood slides.

3. Store stones on wood skids or pallets, covered with non-staining, waterproof membrane. Place and stack skids and stones to distribute weight evenly and to prevent breakage or cracking of stones.

4. Protect stone on wood skids or pallets, covered with non-staining membrane, but allow air to circulate around stones.

5. Store cementitious materials off the ground, under cover and in dry location.

6. Pallets or skids are to be broken down and materials are to be stored without exceeding the 50 psf live load limit of the floor.

1.6 JOB CONDITIONS

A. Do not set stone when air temperature or temperature of materials is below 50 deg. F.

1.6 MAINTENANCE

A. Submit printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated use conditions. Include precautions against materials and methods which may be detrimental to finishes and performance.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Comply with referenced standards and other requirements indicated applicable to each type of material required.

B. Provide matched blocks from a single quarry for each type, variety, color and quality of stone required. Extract blocks from a single bed of quarry stratum, especially reserved for Project.

2.2 INTERIOR SLATE

A. Slate Building Stone Standard: ASTM C 629 with a fine, even grain and with uniform, unfading color from clear, sound stock; classification as follows:

1. Classification: As indicated by the stone selections scheduled.

B. Pattern: As indicated on the approved Shop Drawings.

C. Finish of Interior Slate Flooring: Natural Cleft and honed, unless otherwise indicated.

D. Selected Slate Varieties: Subject to compliance with requirements, slate varieties which may be incorporated in the Work includes the following; matching the Architect's samples.

1. Stone Type S-1: Provide "Lava," natural cleft; as distributed by Stone Source, or approved equal.

2. Stone Type S-2: Provide "Blue Grey," honed; as distributed by Stone Source, or approved equal.

2. Stone Type S-3: Provide "Graphite," natural cleft; as distributed by Stone Source, or approved equal.

2.3 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I. Provide gray or white cement as needed to produce mortar color required.

B. Hydrated Lime: ASTM C 207. Type S.

C. Aggregate: ASTM C 144; and as indicated below:

1. For joints narrower than 1/4" use aggregate graded with 100 percent passing the No. 8 sieve and 95 percent the No. 16 sieve;

2. For pointing mortar use aggregate graded with 100 percent passing the No. 16 sieve.

3. White Mortar Aggregates: Natural white sand or ground white stone, as scheduled.

4. Colored Mortar Aggregates: Ground marble, granite, or other sound stone, as required to match Architect's sample.

D. Colored Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with record of satisfactory performance in stone mortars.

1. Available Products: Subject to compliance with requirements, colored mortar pigments which may be incorporated in the work include the following:

a. "SGS Mortar Colors"; Solomon Grind-Chem Services, Inc.
b. "True Tone Mortar Colors"; Davis Colors, A Subsidiary of Rockwood Indust.
c. Sonobrite; Sonneborn B. P. Div., Rexnord Chemical Products, Inc.

E. Water: Clean, non-alkaline and potable.

2.4 GROUTS

A. Grout Colors: Provide colors to comply with the following requirements:

1. Custom colors as selected by Architect.

B. Latex-Portland Cement Grout: ANSI A118.6, of the following composition:

1. Latex additive (water emulsion) serving as a replacement for part or all of gauging water, added at job site to prepackaged dry grout mix.

2. Products: Subject to compliance with requirements, provide "Laticrete Grout" latex grout by Laticrete International, Inc., or approved equal.

2.5 STONE ACCESSORIES

A. Divider Strips and Edging: Metallic, designed specifically for flooring applications consisting of the following:

1. Exposed-Edge Material: Stainless steel; ASTM A 666, Type 302.

2. Cross-Section Profile and Size: T-Shape, single or 2-part assemblies, 1/8 inch wide, height to match stone thickness. Provide longest available lengths as provided by manufacturer.

B. Setting Buttons: Lead or resilient plastic buttons, non-staining to stone, sized to suit joint thicknesses and bed depths of stonework involved.

C. Reinforcing Wire Fabric: Galvanized welded wire fabric, 2" x 2" - WO.3 x WO.3 (16 ASW gage or 0.0625" diam.); comply with ASTM A 185 and ASTM A 82 except for minimum wire size.

D. Cleavage Membrane: Polyethylene film 4-mil nominal thickness, ASTM D 4397.

E. Cleaner: Provide stone cleaners of proper formulation for kinds of stones, finishes and applications indicated, as recommended by stone producer and, if sealer specified, by sealer manufacturer. Do not use acid-type cleaning agents or other cleaning compounds containing caustic or harsh fillers, except where expressly approved by stone producer for type of condition involved.

F. Sealant Joint Materials: Refer to "Section 07900 - Joint Sealants", of these specifications.

2.6 MORTAR AND GROUT MIXES

A. General: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds, or calcium chloride, unless otherwise indicated.

B. Mixing: Combine and thoroughly mix cementitious materials, water and aggregates in a mechanical batch mixer; comply with referenced ASTM or ANSI standard, as applicable, for mixing time and water content, unless otherwise indicated.

C. Setting Mortars and Grout for Flooring: Comply with mixing requirements of ANSI Standards referenced for materials and installation methods.

2.7 FABRICATION

A. General: Fabricate interior stonework in sizes and shapes required to comply with requirements indicated, including details on Drawings and final shop drawings.

B. Cut and drill sinkages and holes in stones for anchors, fasteners, supports and lifting devices as indicated or needed to set stonework securely in place; shape beds to fit supports.

C. Cut stones to produce pieces of thickness, size and shape indicated or required and within fabrication tolerances recommended by applicable stone association or stone source, for faces, edges, beds, and backs.

D. Thickness of Interior Stone: Provide not less than 3/4 inch thick slate slab materials in the sizes and arrangements indicated on the Drawings.

E. Control depth of stones and back-check to maintain minimum clearances indicated between backs of stones and surfaces or projections of back-up walls and other work behind stones.

F. Dress joints (bed and vertical) straight and at 90-degree angle to face, unless otherwise indicated.

G. Cut stones to produce joints of uniform width and in locations indicated.

   1. Joint Width: 1/8" for exposed joints between stone units. Concealed joint width may vary to a max. of 1/4" with varying joint width used to accommodate alignment and max. exposed joint width requirements.

   2. Factory cut stone treads indicated to receive abrasive strips. Refer to the drawings for the size and configuration of the abrasive strips.

H. Clean sawn backs of stones to remove rust stains and free iron particles.

I. Contiguous Work: Provide chases, reveals, reglets, openings and similar features as required to accommodate contiguous work.

J. Finish exposed faces and edges of stones to comply with requirements indicated for finish under each type and application of stone required and to match approved samples and field-constructed mock-ups.

K. Pattern Arrangement: Where indicated, fabricate and arrange marble with veining and other natural markings to comply with the following requirements:

1. Consult with and obtain approval of Architect for all veining and matching requirements prior to fabrication.

2. Cut stones from one block or contiguous, matched blocks in which natural markings occur.

L. Carefully inspect finished stones at fabrication plant for compliance with requirements relative to qualities of appearance, material and fabrication; replace defective stones with ones that do comply.

1. Grade and mark stones for overall uniform appearance when assembled in place. Natural variations in appearance are acceptable if installed stones match range of colors and other appearance characteristics represented in approved samples and field-constructed mock-ups.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive stonework and conditions under which stonework will be installed and to report in writing any conditions which are not in compliance with requirements. Do not proceed with installation until surfaces and conditions comply with requirements indicated or for execution of other work which affects stonework.

3.2 PREPARATION

A. Advise Installers of other work about specific requirements relating to placement of inserts, and similar items which will be used by Installer. Furnish Installers of other work with drawings or templates showing locations of these items.

B. Clean stone surfaces which have become dirty or stained prior to setting to remove soil, stains and foreign materials. Clean stones by thoroughly scrubbing stones with fiber brushes followed by a thorough drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh filler or abrasives.

C. Protection: Protect all surfaces adjacent to stonework from contact with sealer. Take extra measures to protect glass and glazing materials from contact with sealer.

3.3 SETTING STONE, GENERAL

A. Execute stonework by skilled mechanics, and employ skilled stone fitters at the site to do necessary field cutting as stones are set.

1. Use power saws to cut stones; for exposed edges, produce edges which are cut straight and true.

B. Set stones to comply with requirements indicated on drawings and final shop drawings. Install anchors, supports, fasteners and other attachments indicated or necessary to secure stonework in place. Shim and adjust anchors, supports and accessories to set stones accurately in locations indicated with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances.

C. Construction Tolerances: Set stones to comply with the following tolerances:

1. Variation from Plumb: For lines and surfaces of walls and arrises. For external corners and other conspicuous lines, do not exceed 1/4".

2. Variation from Level: For grades indicated for exposed horizontal joints and other conspicuous lines, do not exceed 1/2".

D. Point joints after setting with pointing mortar of color indicated. Rub joints smooth with plastic tool.

3.5 INSTALLATION OF STONE FLOORING, GENERAL

A. ANSI Tile Installation Standard: Set interior stone flooring to comply with applicable parts of ANSI 108.1 series of installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile".

B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; set interior stone flooring to comply with TCA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.

   1. Prepare substrates in accordance with the recommendations of the Tile Council of America; for each different type of setting system specified.

C. Extend flooring into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of stones without marring visible surfaces. Carefully grind cut edges of stones abutting trim, finish or built-in items for straight aligned joints. Fit stones closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap stones.

E. Install metal edge strips at locations indicated; finishes flush with top of stones.

F. Grout stone flooring to comply with the following:

   1. Ceramic Tile Grouts: ANSI A108.10.

3.6 FLOOR INSTALLATION METHODS

A. Stone Flooring Set in Full Thickness Latex-Portland Cement Mortar Bed: Install stone flooring on plastic mortar bed to comply with requirements of ANSI A108.1 for setting bed, and with TCA installation methods related to types of subfloor construction, and grout types indicated below:

1. Concrete Subfloors, Interior: TCA F111 with cleavage membrane.

2. Grout: Latex-portland cement.

B. Remove grout spillage from face of stone as work progresses.

C. Cure grout by maintaining in a moist condition for 7 days.

D. Do not permit traffic on stone flooring during setting of units or for at least 24 hours after final grouting of joints.

3.7 ADJUSTINGS AND CLEANING

A. Remove and replace stonework of the following description.

1. Broken, chipped, stained or otherwise damaged stones.

2. Defective joints.

3. Stones and joints not matching approved samples and field-constructed mock-ups.

4. Stonework not complying with other requirements indicated.

B. Replace in manner which results in stonework matching approved samples and field-constructed mock-ups, complying with other requirements and showing no evidence of replacement.

C. Clean interior stonework after setting, pointing, grouting and curing is complete; use procedures recommended by stone producer for types of application indicated. Ensure that stonework is free from materials which might inhibit the contact and penetration of sealer.

D. Protect interior stone flooring during construction period with Kraft paper or other heavy covering of type that will not stain or discolor stone.

E. Before inspection for Substantial Completion, remove protective covering and clean stone surfaces using procedures and materials recommended by stne manufacturer.

END OF SECTION

SECTION 09650 - RESILIENT FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide resilient flooring in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Resilient tile flooring.

2. Resilient wall base.

3. Edge strips and other accessories.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete.
2. Section 09250 - Gypsum Board Assemblies.
3. Section 09680 - Carpet.
4. Section 09690 - Carpet Tile.

1.2 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm with not less than 3 years of production experience, whose published literature clearly indicates general compliance of products with requirements of this section.

B. Installer Qualifications: Firm specializing in resilient tile installation with not less than 2 years of experience in installation of resilient tile similar to that required for this project.

C. Single Source Responsibility: Provide resilient flooring produced by a single manufacturer for each type required, including adhesives.

D. Fire Test Performance: Provide resilient flooring which complies with the following performance criteria, as determined by an independent testing laboratory acceptable to authorities having jurisdiction.

1. Critical Radiant Flux (CRF): Not less than 0.45 watts per sq. cm. per ASTM E 648.

2. Flame Spread: Not more than 75 as per ASTM E 84.

3. Smoke Developed: Not more than 450 as per ASTM E 84.

4. Smoke Density: Not more than 450 as per NFPA 258.

1.3 SUBMITTALS

A. Product Data, Samples and Maintenance Data: Submit all information necessary for evaluating, furnishing and installing this work. Submit fire test data.

B. Samples for Initial Selection: Submit manufacturer's standard colors in the form of actual sections of resilient flooring, including accessories, showing full range of colors and patterns.

C. Samples for Verification: Submit the following samples of each type, color, and pattern of resilient flooring required, showing full-range of color and pattern variations.

1. Full-size tile samples.
2. 12" square sheet vinyl flooring samples.
3. 12" long sections of resilient flooring accessories.
4. Other materials as requested.

D. Maintenance Instructions: Submit manufacturer's recommended practices for maintaining each type of resilient flooring required.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver resilient floor coverings and installation accessories to Project site in original manufacturer's unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store flooring materials in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F and 90 deg F.

C. Move floor coverings and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.5 PROJECT CONDITIONS

A. Maintain a minimum temperature of 70 deg F in spaces to receive resilient floor coverings for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F.

B. Do not install resilient floor coverings until they are at the same temperature as the space where they are to be installed.

C. Close spaces to traffic while installing floor covering.

1.6 SEQUENCING AND SCHEDULING

A. Install resilient floor coverings and accessories after other finishing operations, including painting, have been completed.

B. Do not install resilient floor coverings over concrete slabs until the slabs have cured and are sufficiently dry to bond with adhesive as determined by floor covering manufacturer's recommended bond and moisture test.

1.7 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials matching products installed equal to 2% of each type material installed. Extra materials shall be packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering resilient flooring products which may be incorporated in the Work include the following:

1. Allstate Rubber Flooring
2. Azrock Industries, Inc.
3. Kentile Floors, Inc.
4. Congoleum Corporation

2.2 VINYL COMPOSITION TILE

A. Resilient Tile Flooring: Provide 12" x 12" x 1/8" thick vinyl composition tile complying with FS-SS-T-312B, Type IV, Composition 1. Tile shall be comprised of a combination of vinyl, resins, plasticizers, stabilizers, fillers, and pigments, resistant to alkali, grease and oils, uniform color and texture throughout thickness of tile; asbestos free.

1. Tiles and Colors: Provide tiles and colors of patterns and finishes as indicated, if not indicated, as selected by the Architect from the manufacturer's full line of materials, colors, patterns and finishes.

2.3 VINYL BASE

A. Vinyl Base: Fed. Spec. SS-W-40; Type II; 1/8" thickness. Provide cove base at all locations per the Room Finish Schedule, with pre-manufactured corners.

1. Colors: Provide vinyl base of colors, patterns and finishes as indicated, if not indicated, as selected by the Architect from the manufacturer's full line of materials, colors, patterns and finishes.

2. Types: Vinyl base trim, unless otherwise indicated.

3. Heights: Provide 4" high units, unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

A. Resilient Edge Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered edge, not less than 1" wide.

B. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.

C. Leveling and Patching Materials: Nonstaining latex compound as recommended by flooring manufacturer.

1. Provide "Dex-O-Tex A-81", as manufactured by Crossfield Products, or approved equal.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect subfloor surfaces to determine that they are smooth and free from cracks, holes, ridges, coatings preventing adhesive bond, and other defects impairing performance or appearance.

B. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently dry and suitable.

3.2 PREPARATION

A. Remove coatings from subfloor surfaces that would prevent adhesive bond, including paint, oils, waxes and sealers.

B. Broom clean or vacuum surfaces to be covered, and inspect subfloor.

C. Prepare subfloor surfaces using specified leveling and patching compound; filling small cracks, holes, depressions and leveling the concrete subfloors to within the flooring manufacturers tolerances..

1. Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.

D. Apply primer, if recommended by flooring manufacturer, in compliance with manufacturer's directions.

3.3 INSTALLATION, GENERAL

A. Install flooring, base and accessories in strict compliance with manufacturer's recommendations.

3.4 TILE FLOORING

A. Lay tile square to room axis, unless otherwise indicated. Cut tile neatly around all fixtures and obstructions.

1. Refer to the drawings and finish schedules for the indicated floor patterns and starting points.

B. Match tiles for color by using tile from cartons in same sequence as manufactured and packaged if so numbered. Damaged or defective tiles are not acceptable.

C. All tiles shall be laid in the same direction, unless otherwise indicated.

D. Extend flooring into toe spaces, door reveals and into closets and similar openings.

3.5 ACCESSORIES

A. Apply single length pieces of wall base trim to each wall substrate to the greatest extent possible, as indicated on drawings and schedules. Tightly bond base to substrate at horizontal and vertical surfaces.

B. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.

C. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.6 CLEANING AND PROTECTION

A. Perform following operations after installation of resilient flooring:

1. Sweep or vacuum floor thoroughly.

2. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-sealed in adhesive.

3. Damp-mop floor to remove marks and excessive soil.

4. Remove any excess adhesive or other surfaces blemishes, using cleaner as recommended by resilient flooring manufacturer.

B. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.

1. Apply protective floor polish to resilient flooring surfaces free from soil, excess adhesive or surfaces blemishes. Use commercially available product acceptable to resilient flooring manufacturer.

2. Protect resilient flooring against damage for initial period following installation by covering with plywood or hardboard. Use dollies to move materials across floors.

3. Cover resilient flooring with undyed, untreated building paper until inspection for Substantial Completion.

3.7 RESILIENT FLOORING SCHEDULE

A. General: Provide the following resilient flooring materials as indicated on the drawings and schedules.

1. VCT-1

Manufacturer	:	Azrock
Description	:	Vinyl Composition Tile.
Size	:	12" x 12" x 1/8" thick.
Model	:	TQ-218.
Color	:	Buff.

2. B-1

Manufacturer	:	Allstate.
Description	:	Straight base trim.
Color/Model #	:	Grey/#05.
Size	:	4" x 100' roll; with premoled corners.

3. B-4

Manufacturer	:	Allstate
Description	:	Coved base trim.
Color/Model #	:	Black/#09.
Size	:	4" x 100' roll; with premoled corners.

END OF SECTION

SECTION 09680 - CARPET

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide broadloom carpet in accordance with the Contract Documents. The Work of this Section generally includes but is not necessarily limited to the following:

1. Broadloom carpeting, as scheduled.

2. Carpet accessories including reducer strips.

3. Installation adhesives, seaming cements, leveling compounds and other accessories.

B. Related Sections

1. Section 09650 - Resilient Flooring.

1.2 QUALITY ASSURANCE

A. Standards: Comply with applicable provisions and recommendations of the Carpet and Rug Institute "The Carpet Specifiers Handbook".

B. Installer Qualifications: Firm with not less than 5 years of experience in installation of commercial carpeting of type, quantity and installation methods similar to work of this section. All Dealers bidding must submit 2 year written guarantee of work, and a list of similar projects to verify quality assurance. All specified manufacturers must submit written approval authorizing dealers bidding on job.

C. All carpet shall be from a single dye lot.

1.3 SUBMITTALS

A. General: All samples and respective specifications and performance test results of specified carpet shall include anticipated dyelots per color, specific fiber type, specific dye method, total face weight, twist per inch, and all items defined in each carpet specification.

B. Product Data: Submit manufacturer's data, specifications and installation instructions for carpeting materials.

C. Certification: Submit certified laboratory test reports for fire hazard classification of carpet.

D. Samples: Submit (3) 18 in. x 18 in. samples of each type, color and pattern of carpet including current dye lot required prior to manufacturing. Submit 12 in. long samples of carpet edge strip.

E. Shop Drawings: Submit shop drawings showing carpet layout and edge strip locations. Indicate direction of pattern and lay of pile.

1. Indicate the extent of cementitious leveling compound required to conceal the existing convector enclosure bracket assemblies, at the perimeter of the spaces scheduled to receive a carpet finish.

F. Maintenance Instructions: Submit instructions for care, cleaning, maintenance and repair of each scheduled carpet product.

1.4 TESTING

A. Test Reports: Submit certified test reports evidencing compliance with requirements for the following:

1. Fire performance characteristics.

2. Physical properties indicated.

B. Fire Performance Characteristics: Provide carpeting that is identical to that tested for the following fire performance requirements, according to test method indicated, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

1. Flammability: As follows:

a. Rating: Passing Methenamine Pill Test.

b. Test Method: ASTM D 2859; DOC-FF-1-70.

2. Critical Radiant Flux: As follows:

a. Rating: Not less than 0.45 watts per sq. centimeter in all areas.

b. Test Method: ASTM E 648.

3. Smoke Density: As follows:

a. Rating: Not to exceed 300 within the first four minutes of test in the flaming or non-flaming mode.

b. Test Method: ASTM E 662 or NFPA-258.

C. Physical Properties: Provide carpeting that is identical to that tested for the following physical properties, according to the test method indicated.

1. Static Resistance

a. Rating: 3.0 KV when tested at 20% R.H./70 deg F.

b. Test Method: AATCC 134.

D. Certification: Submit manufacturer's certificate stating that materials furnished comply with specified requirements. Include supporting certified laboratory testing data indicating that material meets specified test requirements.

1.5 PRODUCT HANDLING

A. Deliver materials in manufacturer's unopened containers identified with name, brand, type, grade, class and all other qualifying information.

B. Store materials to protect them from moisture, soiling or damage.

1.6 EXTENDED WARRANTIES

A. Provide extended warranties from the manufacturer for the following:

1. Wear: 10 years.
2. Static: Life of installation.

1.7 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage and identified with labels describing contents.

1. Carpet: Before installation begins, furnish quantity of full width for each type of material equal to 5 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, provide broadloom carpet as manufactured by Interface, or approved equal. **(SHC To Verify)**

2.2 CARPET ACCESSORIES

A. Carpet Adhesive: Water-resistant, non-staining release adhesive type as recommended by carpet manufacturer, which complies with flammability requirements of installed carpet.

B. Seaming Cement: Hot-melt seaming adhesive or similar product recommended by carpet manufacturer, for taping seams and buttering cut edges.

C. Edge Strip: Flexco edge strip, "Edge Guard"; color: As selected by the Architect from Manufacturer's standard.

1. Vinyl edge strip No. 81, "Edge Guard" as manufactured by Flexco or approved equal in manufacturer's standard color as selected by the Architect.

D. Carpet Construction: Fabricate the carpet by construction methods indicated in the schedule by manufacturer's standard process.

E. All Other Materials: Architect to select from manufacturer's standard products.

F. Leveling Compound: Manufacturer's recommended latex composition floor leveling and patching compound. Material shall be capable of a feather-edge application.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate the installation of carpet so as not to delay the occupancy of the building or interfere with the completion of construction.

B. Examine the substrates, adjoining construction and the conditions under which the Work is to be installed. Proceed with the Work after unsatisfactory conditions have been corrected.

C. Patch holes and cracks. Sand to level. Remove wax. Seal surface with sealer recommended by carpet manufacturer.

D. Install cementitious leveling compound at perimeter walls as indicated on the approved shop drawings. Level or otherwise grind/sand cured compounds to ensure a flat carpet installation without undulations or similar defects.

3.2 INSTALLATION

A. Comply with manufacturer's recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position; do not place seams perpendicular to door frame, in direction of traffic through doorway. Do not bridge building expansion joints with continuous carpet.

B. Comply with the manufacturer's additional instructions and recommendations.

C. Install carpet with pattern, texture and lay of pile running in the direction shown on shop drawings.

D. Fit sections of carpet prior to application of adhesive. Trim edges and butt cuts with seaming cement.

E. Install edge strip where edge of carpet is exposed. Install in single lengths wherever possible, secure in accordance with manufacturer's directions.

3.3 ADHESIVE INSTALLATION

A. General: Install broadloom carpets utilizing the manufacturer's standard "glue-down" adhesive system, unless otherwise indicated.

B. Fit sections of carpet prior to application of adhesive. Trim edges and butt cuts with seaming cement.

C. Apply recommended adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt edges tight to form seams without gaps. Roll entire area lightly to eliminate air pockets and ensure uniform bond.

1. Use notched metal trowels, to apply adhesive, of size recommended by the carpet manufacturer.

2. Comply with manufacturer's instructions for spread rate.

3. Treat seams of carpet in accordance with manufacturer's instructions.

D. Avoid pedestrian or wheel traffic on newly carpeted surfaces for a minimum of 24 hours, unless otherwise indicated.

3.4 CLEANING AND PROTECTION

A. Vacuum carpet with a commercial vacuum, with rotating agitator or beater in the nozzle. Remove soil spots in accordance with the carpet manufacturer's recommendations.

B. Protect carpet from damage and soiling. Use non-staining cover material for protection. Tape joints in protective covering.

3.5 CARPET SCHEDULE (ARCHITECT TO VERIFY)

A. General: Provide the following types of broadloom carpets as indicated on the drawings and schedules.

1. C2:

Manufacturer	:	Interface
Model	:	Retro/#16626-0770A.
Color	:	Matching Architect's sample.
Dye Method	:	Solution dyed.
Dimension	:	6'-6"
Yarn Weight	:	26 oz./yd.
Machine Gauge	:	1/12
Pile Height	:	0.116 inches.
Total Thickness	:	0.291 inches.
Content	:	100% DuPont Antron Lumena
Total Weight	:	132 oz./yd.
Backing	:	Cushion Bac
Static Control	:	Not to exceed 3.0 KV.
Treatment	:	Manufacturer's standard soil/stain resistant treatment.

END OF SECTION

SECTION 09690 - CARPET TILE

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide carpet tile in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Carpet tile, as indicated.

B. Related Sections

1. Section 10270 - Access Flooring.

1.2 QUALITY ASSURANCE

A. Installer Qualifications: Firm with not less than 3 years of experience in installation of commercial carpeting of type, quantity and installation methods similar to work of this section.

B. General Terminology/Information Standard: Refer to current edition of "Carpet Specifier's Handbook" by The Carpet and Rug Institute; for definitions of terminology not otherwise defined herein, and for general recommendations and information.

C. Carpet Tile Surface Burning Characteristics: Provide carpet tile identical to that tested for the following fire performance characteristics, per test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify carpet tile with appropriate markings of applicable testing and inspecting organization.

1. Flamability:

a. Test Method: DOC FF 1-70 or ASTM D 2859.

b. Rating: Pass.

2. Smoke Density:

a. Rating: Not to exceed 450 within the first four minutes of test in the non-flaming mode.

b. Test Method: ASTM E 662 or NFPA 258.

3. Radiant Panel:

a. Test Method: ASTM E 648.

b. Rating: Class I.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's complete technical product data for carpet tile and accessory items. Submit written data on physical characteristics, durability, resistance to fading, and flame resistance charactertics.

B. Samples: Submit three full size samples of carpet tile.

C. Maintenance Data: Submit manufacturer's printed maintenance recommendations, including methods and frequency recommended for maintaining carpet in optimum conditions under anticipated traffic and use conditions.

D. Shop drawings showing layout and placement of cut tiles. Indicate pile or pattern direction, start points, and locations and types of edge strips. Indicate columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tile. Show installation details at special conditions.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.

B. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Lay flat, blocked off ground. Maintain minimum temperature of 68 deg F at least three days prior to and during installation in area where materials are stored.

1.5 PROJECT CONDITIONS

A. Substrate Conditions: pH of 9 or less when substrate wetted with potable water and pHydrion paper applied.

1.6 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Before installation begins, furnish quantity of material and full-size units equal to 5 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Carpet Tile: As scheduled at the end of this Section.

2.2 CARPET ACCESSORIES

A. Installation Adhesive: Water-resistant, non-staining pressure sensitive type as recommended by carpet tile manufacturer.

B. Miscellaneous Materials: As recommended by manufacturer of carpet tile and selected by Installer to meet project circumstance and requirements.

PART 3 - EXECUTION

3.1 PRE-INSTALLATION REQUIREMENTS

A. Examine substrates conditions under which carpet and carpet tiles are is to be installed. Repair minor holes, cracks, depressions or rough areas using material recommended by carpet or adhesive manufacturer. Notify Contractor in writing of major conditions detrimental to proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

B. Clear away debris from surfaces to receive carpet tile; vacuum clean immediately before installation.

C. Sequence carpet tile installation with other work so as to minimize possibility of damage and soiling of carpet tile during remainder of construction period.

3.2 INSTALLATION

A. General: Comply with manufacturer's recommendations for installation of carpet tile; maintain uniformity of carpet direction and lay of pile, unless otherwise indicated.

1. Extend carpet tile under open-bottomed obstructions, furnishings, and recesses.

2. Provide cut-outs where required, and bind cut edges properly where not concealed by protective edge guards.

3. Dry-fit sections of carpet tile prior to application of adhesive.

B. Carpet Tile Installation

1. Determine the center of the space using standard tile laying methods. The center chalk lines, dividing the room into quadrants, should be off center, if necessary, to ensure that perimeter modules will be half-size or larger.

2. On both sides of chalk line, apply a strip of adhesive at least 9" in width, using a twist-textured paint roller. When adhesive is ready, lay modules firmly along these anchor lines. Fill in each quadrant section laying using the "stair step" technique, completing the installation from center to corner of room in each quadrant, then moving to the next quadrant.

3. In large areas, a control grid of adhesive should be laid every 10', as control of the uniformity of the installation.

4. As each module is installed, ensure that the installation remains square and conforms to chalk lines.

5. Adhere perimeter tiles and cut tiles with a full spread of adhesive. Dry fit all cut tiles and apply adhesive to tile back after tile has been cut. In corridor areas, use full tiles down the center and cut perimeter tile borders.

3.3 CLEANING AND PROTECTION

A. Remove and dispose of debris and unusable scraps.

B. Vacuum carpet tile using commercial machine with face-beater element. Remove spots and replace carpet tile where spots cannot be removed. Remove any protruding face yarn using sharp scissors.

C. Advise Contractor of protection methods and materials needed to ensure that carpeting will be without deterioration or damage at time of substantial completion.

D. Maintenance Materials: Deliver specified extra stock of carpet tile to Owner's designated storage space, properly packaged (paper wrapped) and identified.

3.4 SCHEDULE

A. General: Provide carpet tile as indicated on the Drawings and schedules.

1. C1:

Manufacturer	:	Interface
Model	:	Retro/#16626-0250A.
Color	:	Matching Architect's sample.
Dye Method	:	Solution dyed.
Dimension	:	19.69" x 19.69".
Yarn Weight	:	26 oz./yd.
Machine Gauge	:	1/12
Pile Height	:	0.116 inches.
Total Thickness	:	0.291 inches.
Content	:	100% DuPont Antron Lumena
Total Weight	:	132 oz./yd.
Backing	:	Cushion Bac
Static Control	:	Not to exceed 3.0 KV.
Treatment	:	Manufacturer's standard soil/stain resistant treatment.

END OF SECTION

SECTION 09700 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide resinous flooring in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Resinous flooring and integral base, as indicated.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's technical information and installation instructions for each type of resinous flooring and accessory.

B. Samples: Submit, for verification purposes, 6" square samples of each type of seamless epoxy flooring required, applied to a rigid backing, in color, profile, and finish indicated.

1. For initial selection of colors, submit manufacturer's color charts showing full range of colors and finishes available.

C. Maintenance Instructions: Submit 2 copies of written instructions for recommended periodic maintenance of resinous flooring.

1.3 QUALITY ASSURANCE

A. Manufacturer's Instructions: In addition to specified requirements, comply with resin manufacturer's instructions and recommendations for substrate preparation, materials storage, mixing and application, finishing, and curing.

B. Installer: A firm which has specialized in installing the specified flooring for not less than three years and which is acceptable to manufacturer of primary materials.

C. Single Source Responsibility: Obtain primary seamless epoxy flooring materials including primers, resins, hardening agents, aggregate, finish or sealing coats from a single manufacturer with not less than three years of successful experience in supplying principal materials for work of type described in this Section. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.

1.4 JOB CONDITIONS

A. Ventilation: Provide adequate ventilation during application of solvent-based products in enclosed spaces. Maintain ventilation until coatings have cured.

B. Environmental Conditions: Comply with flooring manufacturer's directions in regard to temperature, humidity and ventilation.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name and directions for storage and mixing with other components.

B. Store materials to comply with manufacturer's directions to prevent deterioration from moisture, heat, cold, direct sunlight, or other causes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, one of the following:

1. Crossfield Products Inc.
2. H.B. Fuller Co.
3. Selby Battersby & Co.
4. General Polymers.
5. Stonhard, Inc.

2.2 MATERIALS, GENERAL

A. Seamless Flooring: 1/8" thick where indicated, "Dex-O-Tex Cheminert "K" Flooring" by Crossfield Products Corp.

1. Flooring shall consist of a trowel applied epoxy resin composition flooring.

2. Flooring shall meet the following minimum standards:

Characteristics	Performance	Test
Compression	10,900 p.s.i.	ASTM C-109
Surface Hardness	Durometer "D" 77	ASTM D-2240
Indentation	0.062"	MIL-D-3134, Para. 4.7.3
Adhesion	900 p.s.i.	MIL-D-3134, Para. 4.7.14
Tensile Strength	2,350 p.s.i.	ASTM D-638
Abrasion Resistance	76 Wear Index	ASTM C-501 (H-22 Wheel)
Water Absorption	0.64%	MIL-D-3134, Para. 4.7.8
Impact Resistance	0.014"	Gardner Impact Tester

B. Waterproof Membrane: 1/16" thick, consisting of reinforced fabric, with latex composition material which is reinforced to fabric, as manufactured by Crossfield Products Corp.

2.03 FLOORING ACCESSORIES

A. Accessory Strips: Match width, material and color of divider strips, unless otherwise indicated. Provide following types of accessory strips as required for complete installation.

1. Base bead and cove base dividers.

2. Nosings for exposed edges of flooring.

B. Control Strips: Double or split units, 1/8" wide, of same material and color as divider strips with 1/8" wide full-depth filler, laminated between strips.

C. Slip Resistant Coating: Provide slip resistant coating where indicated, Cross-Guard Posi-Tred "O" as manufactured by Crossfield Products Corp. Slip resistant profile as selected by Architect.

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Perform preparation and cleaning procedures in compliance with flooring manufacturer's instructions.

B. Concrete Surfaces: Comply with ASTM C 811 unless otherwise required by manufacturer's instructions.

C. Materials: Carefully mix and prepare materials used in flooring system in compliance with manufacturer's instructions.

D. Prime or etch slabs as required and as recommended by the manufacturer. Remove any surface material that will interfere with the bond of the resin matrix base. All depressions and cracks in substrates shall be filled as recommended by the flooring manufacturer. Drains and other slab fixtures shall have been properly secured in position before flooring operations begin. Maintain areas to receive flooring at temperatures recommended by the materials manufacturer.

3.2 APPLICATION

A. General: Apply each component of the seamless epoxy flooring system in compliance with manufacturer's directions to produce a uniform monolithic wearing surface of thickness indicated, uninterrupted except at sawn joints or other types of joints (if any), indicated or required.

B. Prime (Bond) Coat: Apply primer over prepared substrate at manufacturer's recommended spreading rate with timing of application coordinated with subsequent application of topping mix to insure optimum adhesion between the seamless epoxy flooring materials and substrates.

C. Troweled Application of Resinous Flooring System: Trowel-apply base/waterproofing mix including fine aggregates or fillers over freshly applied primer in number of coats and at spreading rates required to produce minimum thickness indicated. Embed reinforcing in latex waterproofing as recommended by the manufacturer. Check thickness at frequent and regular intervals by method recommended by manufacturer. Perform finish troweling over reinforced membrane as work proceeds.

1. Apply reinforced waterproof membrane cover pad on floor and 4'-0" up walls. Floors shall have an epoxy resin coat applied to a uniform 1/8" thickness. Over entire surface and 4'-0" up walls, apply a slip resistant coating.

D. Cove Base: Apply to wall surfaces at locations indicated to form base with cove of radius shown and a height of 6 inches, unless otherwise indicated. Round all interior and external corners.

1. Install reinforcing fabric 6" up wall.

2. Install flooring from floor up the wall a minimum of 6". Taper to a feathers edge.

3.3 FIELD QUALITY CONTROL

A. The right is reserved to invoke following material testing procedure at any time, and any number of times during period of flooring application.

1. The Owner may engage service of independent testing laboratory to sample materials testing used. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

2. Testing laboratory will perform tests for any of characteristics specified, using applicable testing procedures referenced herein, or if not referenced, in manufacturer's product data.

B. If test results show materials being used do not comply with specified requirements, the Contractor will be directed to remove non-complying materials; pay for testing; and reapply flooring materials to surfaces coated with rejected materials.

END OF SECTION

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide field painting of interior items in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Interior items and surfaces, as indicated.

2. Exposed pipes, ducts, conduits and hangers.

3. Exposed steel and primed metal equipment.

    a. Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color is not designated, Architect will select these from standard colors.

B. Related Sections

1. Shop priming is included in sections for structural steel, metal fabrications, steel doors and frames, and similar metal items.

2. Shop priming of shop-fabricated or factory-built products is included under other sections of these specifications.

C. Work Not Included

1. Pre-Finished Items: Do not include painting when shop or factory finishing is specified for such items as elevator, and mechanical and electrical equipment, except for electrical panels exposed in the finished areas of the building.

2. Concealed Surfaces: Painting is not required on surfaces in concealed and generally inaccessible areas such as pipe spaces, duct shafts and elevator shafts.

3. Finished Metal Surfaces: Anodized aluminum, stainless steel, and similar finished metals will not require painting.

4. Operating Parts: Moving parts of mechanical and electrical devices, motor and fan shafts will not require painting.

D. Labels: Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.2 QUALITY ASSURANCE

A. Single Source: Provide primers and undercoats produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

B. Coordination of Work: Review other sections of these specifications for shop primers, to ensure compatibility of total coatings system. Upon request from other trades, furnish information on finish materials, to ensure that compatible prime coats are used.

C. Applicator: A firm with not less than 5 years of successful experience in the application of specified materials.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material.

B. Samples: Prior to painting, submit samples for Architect's review of each required color and texture. Identify materials used on samples. Samples shall have each coat of paint exposed the same amount and tinted slightly different than other coats.

1. On 12" x 12" hardboard, submit three samples of each color, material and texture, until sheen, color, and texture are acceptable.

2. Apply full-coat finish samples on at least 100 sq. ft. of wall surface, where directed, until required sheen, color and texture are obtained; simulate finished lighting for review of work.

1.4 DELIVERY AND STORAGE

A. Deliver materials in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

1. Name or title of material.
2. Fed. Spec. number, if applicable.
3. Manufacturer's name, stock number and date of manufacture.
4. Contents by volume, for major pigment and vehicle constituents.
5. Thinning and application instructions.
6. Color name and number.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.

1. Protect materials from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from use of paints.

1.5 JOB CONDITIONS

A. Apply water-base paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50`F and 90`F, unless otherwise permitted by paint manufacturer's instructions.

B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45`F and 95`F, unless otherwise permitted by paint manufacturer's instructions.

C. Do not apply paint when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include but are not limited to the following:

1. Con-Lux Coatings, Inc.
2. Benjamin Moore & Co.
3. Bollen International Inc.
4. The Sherwin-Williams Co.

B. Proprietary names of colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.

2.2 MATERIALS

A. Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

B. Volatile Organic Materials: Provide paint and coating products to comply with applicable environmental regulations and authorities. Federal numbers, where specified, are for guidelines only.

C. Primers and Undercoaters: Provide primers and undercoaters recommended by the finish coating manufacturer for suitability with the substrate and compatibility with finish coats.

D. Color Pigments: Pure, non-fading, to suit substrates and service.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas and conditions of work and notify Contractor in writing of conditions detrimental to proper painting. Proceed with work after unsatisfactory conditions have been corrected.

B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, or conditions detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION

A. General: Perform preparation and cleaning in accordance with paint manufacturer's instructions and as herein specified.

1. Provide barrier coats over incompatible primers or remove and reprime as required. Notify Architect in writing of any anticipated problems with substrates primed by others.

2. Remove hardware, accessories, lighting fixtures, and similar items not to be field-painted, or provide suitable protection. Remove items if necessary, for painting of items or adjacent surfaces. Reinstall removed items on completion of painting.

3. Clean surfaces to be painted. Remove oil and grease prior to other cleaning. Be sure that cleaning materials do not fall onto newly-painted surfaces.

B. Cementitious Materials: Remove efflorescence, chalk, dust and dirt. Determine alkalinity and moisture content of surfaces to be painted. Correct alkalinity before application of paint.

C. Wood: Scrape and clean small, dry, seasoned knots and apply a recommended knot sealer before priming. After priming, fill imperfections with plastic wood-filler. Sandpaper wood surfaces smooth.

D. Ferrous Metals: Clean unfinished ferrous surfaces of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning. Touch-up defective prime coats with shop primer.

E. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent.

3.3 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Remove surface film and, if necessary, strain material before using.

3.4 APPLICATION, GENERAL

A. General: Apply paint in accordance with manufacturer's directions. Use techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes, are indicated in "schedules" of the Contract Documents.

2. Provide finish coats which are compatible with prime paints used.

3. Apply additional coats when undercoats show through final coat of paint, until paint film is of uniform finish, color and appearance, including edges, corners, crevices, welds, and fasteners.

4. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.

5. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

6. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

7. Sand lightly between each succeeding enamel or varnish coat.

8. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted.

B. Scheduling Painting: Apply first-coat material to surfaces that have been prepared for painting as soon as practicable after preparation. Allow sufficient time for proper drying. Do not recoat until paint feels dry and firm.

C. Minimum Coating Thickness: Apply materials to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

D. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces; this also applies to elevators.

E. Prime Coats: Apply prime coat on material which is required to be painted or finished, and which has not been prime coated by others. Recoat primed and sealed surfaces where there is evidence of defects in first coat, to assure a finish coat without defects.

F. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

G. Completed Work: Match approved samples for color and texture. Repaint work not in compliance with specified requirements.

H. Color Scheme: The Architect reserves the right to inspect selected and approved colors after one entire wall at the site has been painted in each color, and to change up to three times any or all colors upon such inspection.

I. Decorative Coating Systems: Provide decorative coatings consisting of a multiple application of primers, mineral enriched paints and glazes; applied in such a way as to produce a consistent, effect finish system matching the Architect's samples.

1. Decorative finishes shall be applied with brushes, rollers, spatulas, sponges and other conveying devices necessary to achieve the textures and finishes matching the Architect's samples.

3.5 CLEAN-UP AND PROTECTION

A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

1. Upon completion of painting work, clean paint-spattered surfaces. Remove spattered paint by proper methods, with care not to scratch or otherwise damage finished surfaces.

B. Protection: Protect work of other trades against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

1. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

2. At completion of work of other trades, touch-up and restore all damaged or defaced surfaces.

3.6 INTERIOR PAINT SCHEDULE

A. General: Provide the following interior paint systems, or equal by other specified manufacturers, of color as selected by the Architect.

B. Concrete Floors, Ramps, Stair Treads and Platforms

1. Satin Finish, Epoxy-Modified Acrylic Latex: 1 coat over primed surface; "Moore's Latex Floor & Patio Enamel", or equal.

a. Primer shall be the same material as the finish coat; thinned in accordance with the manufacturer's instructions.

C. Gypsum Drywall

1. Flat Vinyl Acrylic Latex: 2 coats over primed surface; Moore's "Regal Wall Satin (215)", or equal.

2. Eggshell Vinyl Acrylic Latex: 2 coats over primed surface; Moore's "Regal AquaVelvet (319)", or equal.

3. Semi-Gloss Vinyl Acrylic Latex: 2 coats over primer; Moore's "Regal AquaGlo (333)", or equal.

5. Decorative Paint: Provide an application of the manufacturer's proprietary acrylic-based - metallic paint system; equal to "Ferroxtone - W #55" as manufactured by Bollen International.

   a. Provide the manufacturer's proprietary surface conditioner/primer. Finish coats shall be the manufacturer's proprietary blended, mineral enriched finish system, matching the Architect's samples.

D. Ferrous Metal

1. Semi-Gloss Vinyl Acrylic Latex: 2 coats over primer; Moore's "Regal AquaGlo (333)", or equal.

2. Decorative Paint: Provide an application of the manufacturer's proprietary acrylic-based - metallic paint system; equal to "Ferroxtone - W #55" as manufactured by Bollen International.

   a. Provide the manufacturer's proprietary surface conditioner/primer. Finish coats shall be the manufacturer's proprietary blended, mineral enriched finish system, matching the Architect's samples.

E. Wood

1. Semi-Gloss Vinyl Acrylic Latex: 2 coats over primer; Moore's "Regal AquaGlo (333)", or equal.

END OF SECTION

SECTION 09950 - WALL COVERINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide wall coverings in accordance wioth the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Fabric wall coverings, as scheduled.

B. Related Sections

1. Section 09250 - Gypsum Board Assemblies.
2. Section 09520 - Fabric Wrapped Panels.
3. Section 09900 - Painting.

1.2 QUALITY ASSURANCE

A. Manufacturer: Provide each type of wall covering as produced by a single manufacturer, including recommended primers, adhesives, and sealants.

B. Installer: A firm specializing in wall covering work with not less than 3 years of experience in installing wall coverings similar to those required for this project.

C. Fire Hazard Classification: Provide materials bearing UL label and marking, indicating fire hazard classification of wall covering, as determined by ASTM E 84. Provide materials with the following fire hazard classifications:

1. Flame spread not more than 25.

2. Fuel contributed not more than 25.

3. Smoke developed not more than 25.

4. Wall covering shall have not less than Class B rating, unless otherwise indicated.

D. Test Panels: Install 3 test panels of full useable width of each type of wall covering, including one corner, in areas designated by Architect. Replace test panels which are not acceptable to Architect until satisfactory installation is achieved. Accepted test panels will serve as standard of quality for installation.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and installation instructions for each type of wall covering and installation material.

B. Samples

1. Prior to backing, submit samples for approval of color and finishing.

2. Prior to installation, submit full width samples of backed wall covering, illustrating range of color and pattern variation.

C. Certification: Submit manufacturer's certification that materials furnished comply with requirements specified.

D. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including precautions for use of cleaning materials which could damage wall covering.

E. Installation Instructions: Submit manufacturer's instructions to Architect and certify transmittal of sample to Installer.

F. Mock-Up: Prepare mock-ups for the fabric wall covering specified. Purpose of mock-ups is further verification of selections made for color and fabrics under sample submittals and establishing standard of quality for aesthetic effects expected in completed work.

1. Provide fabric wall covering mock-ups consisting of two complete walls. Mock-ups shall demonstrate seaming technique and fabric termination details.

2. Approved mock-ups in undisturbed condition at project completion may be incorporated into the work.

1.4 DELIVERY AND STORAGE

A. General: Comply with instructions and recommendations of manufacturer and as herein specified.

B. Deliver materials to project site in original packages or containers clearly labeled to identify manufacturer, brand name, quality or grade, and fire hazard classification.

C. Store materials in original undamaged packages or containers. Do not store rolled goods in upright position. Maintain temperature in storage area above 40`F.

1.5 JOB CONDITIONS

A. Maintain constant minimum temperature of 60`F at areas of installation for at least 72 hours before and 48 hours after application of materials.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Available Manufacturers: Subject to compliance with requirements provide fabric wall coverings as manufactured by Design-Tex, or approved equal; acceptable to the Architect.

B. Colors: All colors shall match control samples on file in the Architect's office.

2.2 MISCELLANEOUS ACCESSORIES

A. Adhesives: Provide manufacturer's recommended adhesive, primer, and sealer, produced expressly for use with selected wall covering on substrate as shown on drawings. Provide materials which are mildew-resistant and nonstaining to wall covering and which are approved by the wall covering manufacturer.

1. Provide water based adhesives complying with applicable New York City environmental regulations and authorities for VOC compounds.

2. Provide wall covering adhesives which meet the specified requirements, and which are recommended by the manufacturer for the applications indicated.

B. Release Coat: Enamel undercoater of type recommended by wall covering manufacturer for drywall substrates.

PART 3 - EXECUTION

3.1 PREPARATION

A. Acclimatize wall covering materials by removing from packaging in area of installation not less than 24 hours before application.

B. Remove switchplates, wall plates, and surface-mounted fixtures in areas where wall covering is to be applied.

C. Prime and seal substrates in accordance with wall covering manufacturer's recommendations for type of substrate.

D. Test substrate with electronic moisture meter to verify that surfaces to be covered do not exceed 4% moisture content.

3.2 INSTALLATION

A. Install wallcoverings where indicated on finish schedules.

B. Hang wallcoverings strictly according to the manufacturer's directions. Place wall covering panels consecutively in order cut from rolls, including filling of spaces above or below openings. Hang wallcoverings by reversing alternate strips unless recommended otherwise by the wall covering manufacturer. Hang panels symmetrically on each wall.

C. Apply adhesive to back of wall covering and place in accordance with manufacturer's instructions. Install seams plumb, and at least 6" away from corners. Horizontal seams are not permitted. Roll, brush, or use broad knife to remove air bubbles, wrinkles, blisters, and other defects. Cut wall covering evenly to edges of wall penetrations.

D. Trim selvage before installation.

E. Keep face of wall covering free of adhesive.

3.3 ADJUSTING AND CLEANING

A. Replace removed plates and fixtures; verify cut edges of wall coverings are completely concealed.

B. Remove surplus materials, rubbish, and debris resulting from wall covering installation upon completion of work, and leave areas of installation in neat, clean condition.

3.4 WALL COVERING SCHEDULE

A. General: Provide the following wall coverings as indicated on the drawings and schedules.

1. WC-1:

Manufacturer	:	Design-Tex.
Model/Style	:	Dalmation.
Color	:	#6320 - 104.
Backing	:	Provide the manufacturer's standard double acrylic backing.
Treatment	:	Treated for direct glue application to drywall partitions. One dye lot for entire job.

END OF SECTION

SECTION 10100 - VISUAL DISPLAY BOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide visual display boards in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Fabric wrapped tackboards, as indicated.

B. Related Sections

1. Section 06100 - Rough Carpentry.
2. Section 09250 - Gypsum Board Assemblies.
2. Section 09950 - Wall Coverings.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, standard details, and installation recommendations. Include manufacturer's data substantiating that visual display board materials comply with requirements indicated.

B. Shop Drawings: Provide shop drawings for each type of board required. Include sections of typical trim members and dimensioned elevations. Show anchors, grounds, reinforcement, accessories, layout, and installation details.

C. Samples: Provide samples of each product for initial selection of colors, patterns, and textures, as required, and for verification of compliance with requirements indicated.

1. Fabric Wrapped Tackboard: 6" x 6" actual sections of tackable cores.

a. Refer to "Section 09950 - Wall Coverings," for fabric selections and similar requirements.

2. Aluminum Trim and Accessories: Samples of each finish type and color, on 6-inch-long sections of extrusions and not less than 4-inch squares of sheet or plate, showing the full range of colors available.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is an authorized representative of the board manufacturer for both installation and maintenance of the each type of board units required for this Project.

1.4 PROJECT CONDITIONS

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

B. Allow for trimming and fitting wherever taking field measurements before fabrication might delay the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturer's offering products which may be incorporated in the work include, one of the following

1. Greensteel Inc.
2. Claridge Products & Equipment
3. Lemco, Inc.

2.2 FABRIC WRAPPED TACKBOARDS

A. Back-Mounted, Edge-Reinforced Tackable Wall Panels: Manufacturer's standard tackable panel construction consisting of facing material laminated to front, edges, and back border of molded glass fiberboard core; with edges chemically hardened to reinforce panel perimeter against warpage and damage; and complying with the following requirements:

1. Core Density: 6-7 lb/cu. ft.

2. Thickness and NRC: Nominal overall panel thickness of 1 inch and NRC of not less than 0.80 for Type A (ABPMA No. 4) mounting.

3. Facing Material: Refer to "Section 09950 - Wall Coverings."

4. Panel Size: As indicated.

5. Corner and Edge Detail: Square, unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Deliver factory-built boards units completely assembled in one piece without joints.

B. Install units in locations and at mounting heights indicated and in accordance with the manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for a complete installation.

3.2 ADJUST AND CLEAN

A. Clean units in accordance with the manufacturer's instructions. Break in boards only as recommended by the manufacturer.

END OF SECTION

SECTION 10160 - TOILET PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide toilet partitions in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Enameled steel toilet partitions, floor supported partitions, as indicated.

2. Enameled steel urinal screens, wall hung, as indicated.

B. Related Sections

1. Section 05500 - Metal Fabrications.
2. Section 09250 - Gypsum Board Assemblies.
3. Section 09300 - Tile.
4. Section 10800 - Toilet Accessories.

1.2 QUALITY ASSURANCE

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to ensure proper fitting of work. Allow for adjustments within specified tolerances where field measurements might delay work.

B. Manufacturer: Firm with not less than 5 years experience in fabrication and installation of toilet partitions similar to those required for this project.

C. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet partitions and related work; coordinate delivery with other work to avoid delay.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fastenings, and accessories.

B. Shop Drawings: Submit shop drawings for fabrication and erection of toilet partitions not fully described by product data, for installation of anchorage devices built into other work.

C. Samples: Submit 6" square samples of each color and finish required on same substrate to be used in work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:

1. General Partitions Corp.
2. Flush-Metal Partition Corp.
3. Metpar Steel Products Corp.

2.3 MATERIALS, ENAMELED STEEL SYSTEM

A. General: Provide materials that have been selected for surface flatness and smoothness. Exposed surfaces that exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are unacceptable.

B. Steel Sheets for Color-Coated Finish: Provide mill-phosphatized steel sheet that is leveled to stretcher-leveled flatness complying with the requirements of standards indicated below:

1. Hot-Dip Galvanized Steel Sheet: ASTM A 653, in manufacturer's standard coating designation and of the following minimum thicknesses:

   a. Pilasters: 0.052 inch.
   b. Panels and Screens: 0.040 inch.
   c. Doors: 0.034 inch.

2. Locations: Provide enameled steel partition systems, as indicated on the drawings and schedules.

C. Core Material: Manufacturer's standard sound-deadening honey comb core, in thickness to provide finished dimension of 1" minimum for doors, panels, and screens, 1-1/4" minimum for pilasters.

2.4 ACCESSORIES

A. Anchorage Reinforcement: Minimum 12-gage galvanized steel sheet.

B. Tapping Reinforcement: Minimum 14-gage galvanized steel sheet.

C. Pilaster Caps: ASTM A167, Type 302/304 stainless steel, not less than 3" high, 20 gage, finished to match hardware.

D. Stirrup Brackets: Manufacturer's standard design for attaching panels to walls and pilasters, Type 302/304 stainless steel.

E. Hardware and Accessories: Manufacturer's standard heavy-duty vandal-proof hardware and accessories of Type 302/304 stainless steel.

F. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel finish to match hardware, with theft-resistant type heads and nuts. For concealed anchors, use hot-dip galvanized or cadmium-plated steel.

2.6 FABRICATION

A. General: Provide standard doors, panels, screens, and pilasters for toilet partitions. Furnish units with cutouts, drilled holes, and internal reinforcement for partition-mounted hardware and accessories.

1. Laminate seamless face sheets to core material and seal edges with continuous interlocking strip or with lapped and formed edges. Weld edges and corners, with exposed welds ground smooth.

B. Door Dimensions: Provide 24" wide doors for toilet stalls, except provide 32" wide doors at stalls for handicapped persons.

C. Floor-Anchored Compartments: Provide manufacturer's standard corrosion-resistant anchoring assemblies complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

D. Wall-Hung Screens: Furnish panel units in sizes required, of same construction and finish as partition system panels.

E. Hardware: Furnish hardware for each partition door as follows:

1. Hinges: Cutout inset type of 302/304 stainless steel, adjustable to hold door open at any angle up to 90 deg., of type to suit manufacturer's standards.

2. Latch and Keeper: Recessed stainless steel latch unit, designed for emergency access, with combination rubber-faced door strike and keeper.

3. Coat Hook: Manufacturer's standard stainless steel unit, combination hook and rubber-tipped bumper.

4. Door Pull: Manufacturer's standard stainless steel unit.

2.6 ENAMELED STEEL FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying finishes.

B. Color-Coated Finish: Provide manufacturer's standard baked finish complying with coating manufacturer's written instructions for pretreatment, application, baking, and minimum dry film thickness.

1. Colors: Colors as selected by Architect from manufacturer's full range of colors.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's instructions. Install partitions rigid, straight, plumb, and level. Provide no more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two brackets near top and bottom of panel, and centered on tile joints. Secure panels to pilasters with not less than two brackets aligned with wall brackets.

B. Floor-Anchored Compartments: Set pilaster units with anchors penetrating not less than 2 inches into structural floor, unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust so tops of doors are level with tops of pilasters when doors are in closed position.

C. Wall-Supported Screens: Where indicated attach with concealed anchoring devices, as recommended by manufacturer to suit supporting structure. Set units to provide support and to resist lateral impact.

3.2 ADJUST AND CLEAN

A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on inswinging doors to hold open approximately 30 deg. from closed position when unlatched. Set hinges on outswinging doors to return to fully closed position.

B. Cleaning: Clean toilet partitions as recommended by manufacturer, and provide protection to prevent damage during remainder of construction period.

END OF SECTION

SECTION 10200 - LOUVERS

PART 1 - GENERAL

1.1 **SUMMARY**

A. Work Included: Provide Louvers in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Continuous aluminum louvers, as indicated..

2. Louver screens.

3. Blank-off panels.

B. Related Sections

1. Section 02070 - Selective Demolition.
2. Section 07600 - Flashing and Sheet Metal.
3. Section 07900 - Joint Sealants.
4. Division 16 - HVAC Work.

1.2 **PERFORMANCE REQUIREMENTS**

A. Structural Performance: Provide louvers to withstand wind loads and stresses from normal thermal movement, without permanent deformation, metal fatigue or permanent damage.

1. Wind Load: Uniform pressure (velocity pressure) of 30 lbf per sq. ft. acting inwards or outwards.

2. Normal Thermal Movement: Movement resulting from 100 deg. F change (range) in air temperature.

B. Air Performance, Water Penetration, and Air Leakage Ratings: Provide louvers complying with performance requirements of Air Movement and Control Association (AMCA) Standard 500.

1.3 **SUBMITTALS**

A. Product Data: Submit manufacturer's data for each product indicated.

B. Shop Drawings: Submit plans, elevations, sections, and details showing profiles, angles, spacing of louver blades; unit dimensions of wall openings and construction; free areas and profiles of frames.

1. Include structural computations, material properties, and other information needed for structural analysis which has been prepared by, or under the supervision of, a qualified Professional Engineer.

C. Samples: Submit selected metal finish on 6 inch square metal samples of same thickness and alloy for final unit of Work. Color to match Architects sample. Submit the following:

1. Full size sample of blank-off panel.

2. Corner sample of louver, no less than 3'0" long.

D. Reports: Submit test reports to show compliance of units with performance requirements indicated.

1.4 QUALITY ASSURANCE

A. Welding: Qualify welding processes and welding operators in accordance with D1.2 "Structural Welding Code - Aluminum".

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include but are not limited to the following:

1. H.H. Robertson.
2. Construction Specialties, Inc.
3. Arrow United Industries

2.2 MATERIALS

A. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005.

B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T5 or T-52.

C. Fasteners: Of same basic metal and alloy as fastened metal.

1. Use types, gages, and lengths to suit installation.

2. Use Phillips flat-head machine screws for exposed fasteners.

D. Anchors and Inserts: Of type, size, and material required for installation indicated. Use nonferrous metal or hot-dip galvanized anchors and inserts for corrosion resistance. Use toothed steel or expansion bolt devices for drilled-in-place anchors.

E. Bituminous Paint: SSPC-Paint 12 (cold-applied asphalt mastic).

2.3 FABRICATION, GENERAL

A. General: Fabricate louvers to comply with requirements for design, dimensions, materials, joinery, and performance.

B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

C. Fabricate frames, including integral sills, to fit in openings with allowances for fabrication and installation tolerances of louvers, adjoining construction, and sealant joints.

D. Include supports, anchorages, and accessories required for assembly.

E. Provide concealed vertical mullions not further apart than recommended by manufacturer, or 72 inches o.c., whichever is less. Provide continuous vertical assemblies unless otherwise indicated.

F. Provide sill extensions and loose sills made of same material as louvers, where required for drainage to exterior and to prevent water penetrating to interior.

G. Join frame members to one another and to fixed louver blades with concealed fillet welds, unless size of louver makes bolted connections between frame members necessary.

H. Coordinate installation of metal wall louvers into glazed curtain wall, as indicated.

2.4 EXTRUDED ALUMINUM LOUVERS

A. Continuous Horizontal Fixed Blade Louvers: Extruded aluminum frames and louver blades with supporting framework concealed from view from outside face of louver by placing braces, mullions, and brackets on inside face; with close fitting, field-mode splice joints in blades designed to permit expansion and contraction without deforming blades or framework; and complying with the following requirements, unless otherwise indicated.

1. Louver Depth: 6 inches, unless otherwise indicated.

2. Frame Type: As indicated.

3. Frame Thickness: 0.081 inch, unless otherwise indicated.

4. Louver Blade Thickness: 0.081 inch, unless otherwise indicated.

5. Louver Blade Profile: As indicated.

6. Louver Blade Angle: 30 degrees, unless otherwise indicated.

   a. Provide concealed vertical mullion where required.

7. Louver Blade Spacing: As indicated.

8. Performance Requirements: As follows, determined by testing units 48 inches wide by 48 inches high per AMCA Standard 500:

   a. Louver Free Area: Not less than 50%, as per H.V.A.C. requirement.

b. Static Pressure Loss: Not more than 0.15 inch water gage at an airflow of 1000 fpm free area intake velocity.

c. Water Penetration: Not more than 0.02 oz. per sq. ft. of free area at an airflow of 1450 fpm when tested for 15 minutes.

9. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.5 LOUVER SCREENS

A. General: Comply with the following requirements:

1. Screen Location for Fixed Louvers: Interior face.

2. Screening Type: Bird screening, unless otherwise indicated.

B. Fasteners: Secure screens to louver frames with stainless steel machine screws at each corner and at 12 inch o.c. in between.

C. Louver Screen Frames: Fabricate rewirable screen frames with mitered corners to comply with the following requirements:

1. Metal: Same metal as louver frames. Reinforce screen frames at corners with clips.

2. Finish: Same finish as louver frames.

D. Louver Bird Screening: Provide bird screening of 1/2 inch square mesh formed with 0.063 inch diameter aluminum wire.

2.6 BLANK-OFF PANELS

A. General: Fabricate blank-off panels from materials and to sizes indicated and to comply with the following requirements:

1. Finish: Match finish applied to louver with respect to coating type, except for color which shall be Black.

2. Fasteners: Attach blank-off panels to back of louver frames with stainless steel sheet metal screws.

B. Noninsulated Blank-Off Panels: Where indicated, provide metal sheet complying with the following requirements:

1. Aluminum sheet for aluminum louvers; 0.051 inch thickness.

2.7 ALUMINUM FINISH

A. General: Provide aluminum louver assemblies of the finish, color, gloss and other aesthetic effects matching the existing curtainwall as approved by the Architect.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate setting drawings, instructions and directions for installation of anchorages and other fastening devices.

3.2 INSTALLATION

A. Set louvers plumb, level, and in proper alignment with adjacent work.

B. Use concealed anchorages where possible. Provide lead washers where required to protect metal and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Protect metal from corrosion or galvanic action with a heavy coating of bituminous paint on surfaces which will be in contact with concrete, masonry, or dissimilar metals.

F. Install concealed gaskets, flashings, joint fillers, and insulation, as required to make louver joints weathertight. Comply with Division 7 Section "Joint Sealers" for sealants applied during installation.

3.3 ADJUSTING AND PROTECTION

A. Protect louvers from damage of any kind during construction period. Remove protective covering at time of Substantial Completion.

B. Restore damaged louvers with no evidence of correction work. If restoration is unsuccessful, as judged by Architect, remove damaged units and replace with new units.

1. Clean and touch-up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

3.4 CLEANING

A. Periodically clean exposed surfaces of louvers during construction period; do not let soil accumulate until final cleaning.

B. Before final inspection, clean exposed surfaces with water and with a mild soap or detergent. Rinse thoroughly and dry surface.

END OF SECTION

SECTION 10270 - ACCESS FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide access flooring in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Gravity-held, concrete filled formed steel panel, as indicated.

2. Stringer (understructure) suspension systems, pedestals, adhesives and other accessories.

3. Integral ramp, railings, steps and other accessories as indicated.

B. Related Sections

1. Section 03300 - Cast-In-Place Concrete.
2. Section 09250 - Gypsum Drywall.
3. Section 09690 - Carpet Tile.
4. Divisions 15 and 16 - Mechanical and Electrical Work.

1.2 DEFINITIONS

A. Access flooring is a complete portable assembly of modular floor panels on an elevated support system (understructure), forming an accessible underfloor cavity to accommodate electrical and communication services.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Performance Requirements, General: Design, engineer, fabricate, and install access flooring systems to comply with performance requirements specified, as demonstrated by testing of manufacturer's corresponding stock systems per acceptable test methods.

B. Structural Performance per CISCA/AF: Provide access flooring capable of supporting the following loads, within limits and under conditions indicated, as demonstrated by testing according to applicable procedure in Ceilings & Interior Systems Construction Association (CISCA) "Recommended Test Procedures for Access Floors" referenced elsewhere in this section as CISCA/AF:

1. Floor panels, including those with cutouts, capable of supporting concentrated design loads of 1500 lbf magnitude, with a bottom surface deflection under load and a permanent set not to exceed, respectively, 0.10 inch and 0.010 inch, measured below each applied load location at the horizontal surface of nearest composite beam.

2. Pedestal assemblies capable of withstanding the following types of loads per pedestal, without panels or other supports in place.

   a. Overturning moment of 1,000 inch-pounds.

   b. Axial load of 7,000 lbs.

3. Flooring system capable of supporting the following loads:

   a. Ultimate concentrated load without failure. Ultimate concentrated load shall be not less than value obtained from multiplying the factor indicated below by the specified concentrated design load on floor panels. Failure is defined as the point at which access flooring system will not take any additional load.

   b. Factor: 3.

C. Rolling loads of the following magnitude, applied to panels through CISCA A/F wheel number indicated, with a combination of local and overall deformation not to exceed 0.040 inch measured across panel's 24 inch span and a permanent beam set not to exceed 0.020 inch, after exposure to rolling load over CISCA/AF path A or B, whichever path produces the greatest top surface deformation:

1. CISCA/AF Wheel 2, 1000 lbs. rolling load (applied through 6 inch diameter x 1-1/2 inch width wheel with an alathane tread surface for 10,000 passes).

D. Impact Loads: Design, engineer, fabricate, and install manufacturer's standard floor panels to withstand 150 lbs. impact load when dropped from 12 inches onto a one square inch area located anywhere on panel.

1.4 SUBMITTALS

A. Product Data: Manufacturer's standard data describing access floor construction and data describing performance characteristics. Include maintenance data and instructions.

B. Shop Drawings: Submit shop drawings indicating complete layout of access flooring system based on field-verified dimensions; include dimensional relationships to adjoining work installation tolerances. Include details, with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories, understructure, and other data to permit a full evaluation of entire access flooring system.

C. Samples for Selection: Samples for initial selection purposes in form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors, textures, and patterns available for each type of exposed finish indicated.

D. Samples for Verification: Samples for verification purposes in full size units of each type of exposed finish indicated.

E. Qualification Data: Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project name, addresses, names of Architects and Owners, plus other information specified.

F. Test Reports: Product test reports from qualified independent testing laboratory evidencing compliance of access flooring with performance requirements, based on comprehensive testing performed by qualified independent testing laboratory or by access flooring manufacturer and witnessed by qualified independent testing laboratory.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is approved by the access flooring manufacturer for installation of the types of access flooring required for this Project.

B. Testing Laboratory Qualifications: To qualify for acceptance, an independent testing laboratory must demonstrate to Architect's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct satisfactorily the testing indicated without delaying the progress of the Work.

C. NFPA Standard: Provide access flooring complying with NFPA 75 requirements for access flooring.

D. Single Source Responsibility: Obtain access flooring from one source from a single manufacturer.

E. Coordination of Work: Coordinate location of electrical work in underfloor cavity to prevent interference with access flooring pedestals.

F. Components and assembly shall be approved for use in New York City. Provide applicable BSA and or MEA certifications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver access flooring components in original, unopened packages, clearly labeled with manufacturer's name and item description.

B. Handle and store packages containing access flooring in a manner which avoids overloading building structure.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of access flooring until installation area is enclosed and has an ambient temperature of between 40 deg F and 90 deg F, and a relative humidity of not more than 70 percent.

B. Field Measurements: Check actual locations of walls and other construction to which access flooring must fit, by accurate field measurements before preparation of shop drawings; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.

1.8 SEQUENCING AND SCHEDULING

A. Mark pedestal locations on the concrete subfloor so that mechanical and electrical work can take place without interfering with pedestals.

B. Coordinate installation of access flooring with substantial completion of other performable construction within affected spaces.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Available Manufacturer: Subject to compliance with requirements, provide access floor panel systems as manufactured by one of the following, or approved equal

1. Interface Architectural Resources
2. GH International, Inc.

B. Products: Provide lightweight concrete filled steel panel access flooring system "Tec-Crete II" with a mechanically attached stringer understructure and gravity-held floor panels, as manufactured by Interface Architectural Resources, or approved equal.

2.2 FLOOR PANELS

A. General: Provide manufacturer's standard modular field panels of size and construction indicated, that are interchangeable with other standard field panels, easily placed and removed without disturbing adjacent panels or understructure by one person using a portable lifting device.

B. Nominal Panel Size: 24 inches by 24 inches.

C. Fabrication Tolerances: Fabricate panels to the following tolerances with squareness tolerances expressed as the difference between diagonal measurements from corner to corner:

1. Size and Squareness: Plus or minus 0.015 inch of required size, with a squareness tolerance of plus or minus 0.015 inch, unless tolerances are otherwise indicated for a specific panel type.

2. Flatness: Plus or minus 0.020 inch measured on a diagonal on top of panel.

D. Lightweight-Concrete-Filled Formed-Steel Panels: Lightweight-concrete-filled panels fabricated with flat top sheet and formed bottom pan formed from electrolytic-zinc-coated cold-rolled steel sheet and joined together permanently and structurally by hemming and joined to concrete core by adhesive to form an enclosed assembly.

1. Provide continuous gasket at contact surfaces between panel-and-pedestal head, and panel-to-stringer conditions to deaden sound, to form an effective plenum seal, and where required, to maintain panel alignment and position.

2.3 FLOOR PANEL COVERING

A. General: Cover tops of floor panels to comply with requirements indicated for color, pattern, and material.

B. Materials, Colors and Patterns: Refer to "Section 09690 - Carpet Tile."

C. Edging: Manufacturer's standard form of edge trim, either integral with floor covering or applied. For applied edge trim, use method standard with manufacturer involving either mechanical or adhesive attachment or both of edge trim to perimeter of each panel. Select size and profile of applied edge trim to suit floor covering selected.

2.4 UNDERSTRUCTURE

A. Pedestals: Provide manufacturer's standard pedestal assembly including base, column with provisions for height adjustment, and special head (cap) with pre-drilled and pre-threaded holes for mechanical fastening of the panels and/or stringers; made of galvanized steel.

1. Base: Square or circular base with not less than 16 sq. inches of bearing area.

2. Provide vibration-proof mechanism for making and holding fine adjustments in height for leveling purposes over a range of not less than 2 inches. Include means of locking leveling mechanism at a selected height, which requires deliberate action to change height setting and prevents vibratory displacement.

3. Fabricate units to height indicated.

4. Head: Manufacturer's standard design for the mechanical attachment of each steel panel corner and stringer, as indicated.

B. Stringer Systems: Modular steel stringer systems made to interlock with pedestal heads and form a grid pattern placing stringers under each edge of each floor panel and a pedestal under each corner of each floor panel. Protect steel components with manufacturer's standard galvanized or corrosion-resistant paint finish.

1. Bolted Stringers: System of main and cross stringers connected to pedestals with threaded fasteners accessible from above.

2. Provide continuous gasket at contact surfaces between panel and stringers to deaden sound, to seal off underfloor cavity from above, and to maintain panel alignment and position.

3. Provide stringers that support each edge of each panel where required to meet design-load criteria.

2.5 ACCESSORIES

A. Colors and Finishes: For exposed accessories available in more than one standard color or finish, provide color or finish complying with the following requirements:

1. Provide selections made by Architect from manufacturer's full range of standard colors and finishes for products and materials indicated.

B. Cutouts: Fabricate cutouts in floor panels to accommodate cable penetrations and service outlets. Comply with requirements indicated for size, shape, number, and location. Provide reinforcement or additional support, if needed, to make panels with cutouts comply with standard performance requirements.

1. Fit cutouts with manufacturer's standard grommets in sizes indicated or, where size of cutouts exceed maximum grommet size available, trim edge of cutouts with manufacturer's standard plastic molding having tapered top flange.

a. Furnish removable twist-close covers.

2. Provide cutouts where indicated in the drawings.

C. Service Outlets: Manufacturer's standard UL-listed and -labeled assemblies, for recessed mounting flush with top of floor panels, designed and fabricated to accommodate power, communication, and signal cables, and complying with following requirements:

1. Structural Performance: Cover capable of supporting a 1,000 lbf concentrated load.

2. Cover and Box Type: Hinged cover with opening for passage of cables when cover is closed and including frame and steel box or formed steel plate for mounting of electrical receptacles.

   a. Location: Locate outlets in panel, as indicated.

   b. Receptacles and Wiring: Electrical receptacles and wiring for service outlets are specified in Division 16 sections.

D. Plastic Floor Grilles with Dampers: Manufacturer's standard load-bearing grilles molded from polycarbonate plastic to produce removable one piece unit precisely fitted in factory-prepared openings of standard field panels, with adjustable/removable damper blades and complying with requirements indicated below:

   1. Air Distribution Characteristics: Capable of delivering 574 cfm at 0.10 inch static pressure.

   2. Structural Performance: Capable of supporting a 1,000 lbf concentrated load.

   3. Fire Performance Characteristics: Classified 94V-0 per UL 94 (Tests for Flammability of Plastic Materials for Parts in Devices and Appliances).

E. Plenum Dividers: Manufacturer's standard metal plenum divider, located where indicated to divide underfloor plenum.

F. Vertical Closures (Fascia): Where underfloor cavity is not enclosed by abutting walls, columns, beams, or downturned slabs, provide manufacturer's standard metal closure plates with factory-applied finish.

G. Ramps: Manufacturer's standard ramp construction of width and slope indicated, but not steeper than 1 in 12, with finish as selected by Architect, and of same materials, performance, and construction requirements as the access flooring.

H. Panel Lifting Device: Manufacturer's standard portable lifting device of type and number required for lifting panels with floor covering provided.

1. Provide 2 lifting devices.

I. Perimeter Support: Provide manufacturer's standard edge supports at perimeter of space and junctures of access floors and adjoining ramps.

PART 3 - EXECUTION

3.1 PREPARATION

A. Pre-Installation Adhesive Subfloor Field Test: Prior to proceeding with installation of pedestals, field test their adhesion to subfloor surface as follows:

1. In areas representative of subfloor surface condition, set typical pedestal assemblies in same adhesive and methods required for completed work.

2. Allow test installation to cure for 14 days, with a pressure of 25 lbf applied vertically to pedestals during this period.

3. After curing, apply lateral loads against a straight steel extension bar inserted 2 inches into pedestal stems. Measure with spring scale the force needed to cause adhesive failure between pedestal base and subfloor.

4. Do not proceed with installation until tests evidence compliance with indicated requirement for pedestal's capability to resist overturning bending movement.

B. Locate each pedestal and complete any necessary subfloor preparation, and vacuum clean the subfloor of all dust, dirt, and construction debris before starting installation.

3.2 INSTALLATION

A. Install access floor systems and accessories under supervision of the access flooring manufacturer's authorized representative to ensure rigid, firm installation free of vibration, rocking, rattles, squeaks, and other unacceptable performance.

B. Set pedestals in adhesive as recommended by the access flooring manufacturer to provide full bearing of the pedestal base on the subfloor.

C. Secure stringers to pedestal heads according to the access flooring manufacturer's instructions.

D. Layout floor panel installation in accordance with the drawings. Scribe panel assemblies at perimeter to provide a close fit with no voids greater than 1/8 inch where panels abut vertical surfaces. Install edge support at cut panels.

E. Clean dust, dirt, and construction debris caused by floor installation, including vacuuming the subfloor area, as installation of floor panels proceeds.

F. Cut and trim access flooring and perform other dirt-or-debris-producing operations as remotely as possible from installation area and to prevent contamination of subfloor under access flooring already installed.

1. To prevent dusting, seal cut edges of the lightweight concrete filled panels with sealer recommended by panel manufacturer.

G. Secure stringers to pedestal heads according to the access flooring manufacturer's instructions.

H. Accurately scribe and fit plenum dividers to subfloor and seal with mastic to ensure maintenance of plenum effect.

I. Accurately scribe and fit vertical closures to subfloor and adjacent finish floor. Set in mastic and seal if required for plenum effect.

J. Clean dust, dirt, and construction debris caused by floor installation, including vacuuming the subfloor area, as installation of floor panels proceeds.

K. Do not cut and trim access flooring components or perform other dirt-or-debris-producing operations in the rooms where the floor is being installed.

L. Cut and trim access flooring and perform other dirt-or-debris-producing operations as remotely as possible from installation area and to prevent contamination of subfloor under access flooring already installed.

M. Level installed access floor to within 0.10 inch of true level over the entire area and within 0.060 inch in any 10-foot distance.

N. Completed access flooring installation shall provide electrical ground continuity within the system.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. After completion of installation, vacuum clean the entire floor surface and cover with continuous sheets of reinforced paper or plastic. Maintain and repair damages to protective covering until time of Substantial Completion.

B. Replace access floor panels which are chipped, broken, stained, scratched, or otherwise damaged, or do not conform to specified requirements.

END OF SECTION

SECTION 10522 - FIRE EXTINGUISHER AND CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide fire extinguishers and cabinets in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Recessed mounted, fire extinguisher cabinets.

2. Fire extinguishers.

3. Fire extinguisher brackets.

B. Related Sections

1. Section 07900 - Joint Sealants.
2. Section 09250 - Gypsum Board Assemblies.

1.2 QUALITY ASSURANCE

A. Single Source: Obtain products in this section from one manufacturer.

B. Coordination: Verify that fire extinguisher cabinets are sized to accommodate fire extinguishers of type and capacity indicated which will be provided by Owner under separate contract.

C. UL-Listed Products: Provide new portable fire extinguishers which are UL-listed and bear UL "Listing Mark" for type, rating, and classification of extinguisher indicated.

D. FM Listed Products: Provide new portable fire extinguishers which are approved by Factory Mutual Research Corporation for type, rating, and classification of extinguisher indicated and carry appropriate FM marking.

1.3 SUBMITTALS

A. Product Data: Submit product data for products in this section. For fire extinguisher cabinets include roughing-in dimensions and details showing mounting methods, relationship to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, and panel style and materials.

B. Samples: Submit samples of each required finish. Prepare samples on metal of same gage as used for production. Where normal color variations are to be expected, include 2 or more units in each sample set showing limits of variation.

1. For initial selection of colors and finishes, submit manufacturer's color cards showing full range of standard colors available.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturer: Subject to compliance with requirements, provide products from Larsen Manufacturing, Inc., or approved equal.

1. Ansul Fire Protection.
2. J.L. Industries.
3. Potter-Roemer, Inc.

2.2 FIRE EXTINGUISHERS

A. General: Provide fire extinguishers for each extinguisher cabinet and other locations indicated, in color and finishes selected by Architect from manufacturer's standard which comply with requirements of governing authorities.

1. Abbreviations indicated below to identify extinguisher types related to UL classification and rating system and not necessarily to type and amount of extinguishing material contained in extinguisher.

B. Multi-Purpose Dry Chemical Type: UL-rated 4A:60B:C, 5 lb. nominal capacity, in enameled steel container, for Class A, Class B and Class C fires.

1. Selected Product: Provide Larsen's #MP5-A fire extinguishers.

2.3 MOUNTING BRACKETS

A. Brackets: Designed to prevent accidentally dislodging extinguisher, of sizes required for type and capacity of extinguisher indicated, in plated finish.

B. Provide brackets for extinguishers not located in cabinets.

C. Selected Product: Provide Larsen's #821 fire extinguisher brackets.

2.4 FIRE EXTINGUISHER CABINETS

A. General: Provide fire extinguisher cabinets where indicated, of suitable size for housing fire extinguishers of types and capacities indicated.

B. Construction: Manufacturer's standard enameled steel box, with trim, frame, door and hardware to suit cabinet type, trim style, and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.

1. Fire-Rated Cabinets: UL listed with UL listing mark with fire-resistance rating of wall where it is installed.

D. Cabinet Type: Suitable for containing fire extinguisher.

E. Cabinet Mounting: Suitable for the following mounting conditions:

1. Recessed: Cabinet box (tub) fully recessed in walls of sufficient depth to suit style of trim indicated.

F. Trim Style: Fabricate trim in one piece with corners mitered, welded, and ground smooth.

1. Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

a. Square-edge trim with 1/4- to 5/16-inch backbend depth.

b. Trim Metal: Stainless steel, ASTM A 167, AISI Type 302/304 alloy.

G. Door Material and Construction: Manufacturer's standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.

1. Stainless Steel: Manufacturer's standard door construction, fabricated from stainless steel complying with ASTM A 167, for AISI Type 302/304 alloy.

H. Door Glazing: Fully tempered float glass complying with ASTM C 1048, Condition A, Type I, Quality q3, Kind FT, Class 1 (clear).

I. Identify fire extinguisher in cabinet with FIRE EXTINGUISHER lettering applied to door. Provide lettering to comply with authorities having jurisdiction for letter style, color, size, spacing, and location.

1. Application Process: As selected by the Architect.

I. Identify bracket-mounted extinguishers with FIRE EXTINGUISHER in red letter decals applied to wall surface. Use letter size, style, and location as selected by Architect.

J. Door Style: Manufacturer's standard design.

1. Duo Panel: Float glass, 1/8 inch thick.

K. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam-action latch, or exposed or concealed door pull and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 deg.

L. Selected Product: Larsen's "Vertical Duo" Model #FS2409 - R1, unless otherwise indicated.

2.5 FACTORY FINISHING OF FIRE EXTINGUISHER CABINETS, GENERAL

A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying temporary strippable protective covering prior to shipping.

2.6 STAINLESS STEEL CABINET FINISHES

A. Remove or blend tool and die marks and stretch lines into finish.

B. Grind and polish surfaces to produce uniform-directional, textured polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

1. Bright, Directional Polish: AISI No. 4 finish.

C. Passivate and rinse surfaces after polishing. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Follow manufacturer's printed instruction for installation.

B. Install items included in this section in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

1. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

2. Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

END OF SECTION

SECTION 10650 - OPERABLE PARTITION SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide operable partition systems in accordance with the Contract Documents. The Work of this Section shall includes but not be limited to the following:

1. Manually operated, paired panel partition systems.

B. Related Sections

1. Section 05120 - Structural Steel.
2. Section 05500 - Metal Fabrications.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

A. Acoustical Performance: Provide operable panel partitions tested for the following acoustic properties according to following test method:

1. Sound Transmission Requirements: Operable panel partition assembly tested for laboratory sound transmission loss performance according to ASTM E 90, determined by ASTM E 413 and rated for not less than an STC plus or minus 1 as follows:

   a. Sound Transmission Class (STC): 56, unless otherwise indicated.

2. Noise Isolation Class Requirements: Operable panel partition assembly tested for laboratory noise isolation class according to ASTM E 336, and rated for not less than an NIC as follows:

   a. Noise Isolation Class (NIC): 43, unless otherwise indicated.

1.3 SUBMITTALS

A. Product Data: Submit product data on physical characteristics, durability, and surface-burning characteristics for each type of operable panel partition and accessory specified.

B. Shop Drawings: Submit shop drawings showing location and extent of operable panel partitions. Include plans, elevations, large-scale details of anchorages, supporting structure and accessory items.

1. Indicate proposed methods of attachment to structural steel. Provide load values at all connections to structural steel.

2. Indicate unit conditions at openings, location and installation requirements for hardware, and direction of travel.

C. Template Drawings: Submit template drawings prepared by manufacturer showing location of items supported or anchored by permanent construction.

D. Samples: Submit samples for verification purposes of each type of panel finish face indicated; in sets for each color, texture, and pattern specified, showing a full range of variations expected in these characteristics.

1. Finish Face Fabric: Full-width sample, not less than 36 inches long, with specified treatments applied. Show complete pattern repeat.

2. Panel Finish Face: Manufacturer's standard size unit, not less than 3 inches square.

3. Panel Edge Material: Manufacturer's standard size unit, not less than 3 inches square.

E. Product Certificates: Submit product certificates signed by manufacturers of operable panel partitions certifying that their products comply with specified requirements.

1. Acoustical test reports from and based on tests performed by a qualified independent testing agency certifying that the product and materials furnished comply with specified requirements.

F. Maintenance Data: Submit maintenance data for panel finish face to include in the following:

1. Precautions for cleaning materials and methods that could be detrimental to finishes and performance.

2. Instructions for restretching sagging or distorted finish face.

G. Installer Qualifications: The Contractor shall submit names and locations of three installations of operable panel partition systems equivalent to the proposed project system completed by Installer which meet the field measured NIC 45 performance criteria.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is certified in writing by the operable panel partition manufacturer as qualified to install the manufacturer's partition systems.

B. Surface-Burning Characteristics: Provide panel finish face with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or other testing and inspecting agencies acceptable to authorities having jurisdiction.

1. Flame Spread: 25 or less.

2. Smoke Developed: 150 or less.

1.6 WARRANTY

A. Partitions and suspension system shall be guaranteed against defects in material and workmanship for one year. Panel faces shall be guaranteed against delamination from frames for ten years.

B. The Contractor shall provide a guarantee that the installed operable panel system's field installation performance shall not be less than NIC 45 as determined in accordance with ASTM E 413-87, and a noise reduction at 125 Hz 1/3 O.B. not less than 27dB. as designated by ASTM E336-84.

1. Guarantee of installed operable panel system is not a substitute, nor supersedes the requirement for laboratory testing and certification of the STC 51 rating.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturer: Subject to compliance with requirements manufacturers offering operable panel partition systems as manufactured by one of the following, or approved equal.

1. Industrial Acoustics Co./Trackwall.
2. Ferrowall/ Emco inc.
3. Modernfold Inc.
4. Advanced Equipment Corp.

B. Products: Provide operable partition systems "Model 8221 (w/ paired door)", as manufactured by Ferrowall/Emco Inc., or approved equal.

2.2 OPERABLE PANEL PARTITION SYSTEM

A. Panel Configuration: Operable panels as follows:

1. Manually operated, single panels.

B. Panel Construction: Top reinforcing as required to support suspension components and as follows:

1. Steel Frame, 16 gage welded steel channel frame.

2. Panel surface, ridged high density skin with steel reinforced faces and sound retardant core.

3. Edge assemblies, Extruded aluminum shapes incorporating vinyl acoustical seals with "Fine-line" joint.

4. Panel Thickness: 3.5 inches.

5. Panel Weight: 12-14 psf.

6. Hardware: Manufacturer's standard, finished to match exposed hardware on partition, color and finish to match Architects sample.

C. Clearances: Provide clearances between panel bottom and finished floor covering of 1/2", between panel top and metal soffit construction of 1/2".

2.3 SUSPENSION SYSTEMS

A. Carriers: Two dual counter rotating horizontal drive trolley system as required for type, size, and weight of partition for ease of operation.

1. Track, High strength anodized 6061-T6 aluminum with integral soffit cap. Color as selected by Architect.

2. Provide additional framing and attachment devices as required to attach partition track to supporting structure above.

B. Track deflection shall be no more than 0.10 inch between bracket supports.

2.4 FINISH SURFACE

A. Fabric Materials: Provide materials and types as indicated. Color and pattern to be selected by Architect.

2.6 SEALS

A. Horizontal Bottom Seals: Retractable seal exerting positive pressure downward ensuring horizontal and vertical sealing and resisting panel movement.

1. Extension/retraction of bottom seal by operating handle mechanism. Clearance between retracted seal and floor finish shall be not less than 1-1/2 inch.

B. Final Closure: Positive lever activated mechanical closure expanding from panel edge to create a positive acoustical seal.

1. Fixed jamb, channel. Color - as selected by Architect.

2. Provide "Bulb" seal at edge of leading panel and adjustable panel at edge of last panel.

2.6 ACCESSORIES

A. Pass Door: Manufacturer's standard single pass door. **(VERIFY)**

B. End Panel Closure: Manufacturer's standard horizontally expanding panel, to close with face of storage closet door providing acoustical seal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine flooring, structural support, and opening for compliance with requirements for installation tolerances and other conditions affecting performance of operable panel partitions.

1. Provide a floor levelness of 1/16" in 10' lineal feet nonacumulative

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install operable panel partitions and accessories complying with ASTM E 557 after other finishing operations including painting, have been completed.

B. Install operable panel partitions that conform to Drawings and approved shop drawings and in strict compliance with manufacturer's written installation instructions.

C. Match operable panel partitions for color and pattern by installing partitions from cartons in same sequence as manufactured and packaged, if so numbered. Broken, cracked, chipped, or deformed panels are not acceptable.

3.3 ADJUSTING

A. Lubricate bearings and sliding parts; adjust to ensure smooth, easy operation.

3.4 FIELD QUALITY CONTROL

A. Field tests will be set up by the operable panel manufacturer, and sound tests will be performed by the Acoustical Consultant, in the presence of the Architect. The Manufacturer's representative, Installer, Contractor, Acoustician, Architect shall be present to observe the testing procedures and conditions. System shall be approved by Architect based on performance and requirements specified.

1. Prior to testing, examination of the surrounding areas, including construction and similar flanking paths will not affect the performance of the systems, or the field testing procedures.

2. Panel manufacturer shall make adjustments to the operable partitions, as required.

B. Owner shall bear the initial costs associated with the field testing of the operable panel system. Re-testing and other costs, directly or indirectly, resulting from failure of the field tested operable panel system not meeting the specified performances shall be borne solely by the contractor.

1. Re-testing, if required, shall be conducted by the Acoustician; in the presence of the Manufacturer, Architect, installer and Contractor.

2. Operable panel systems shall be re-tested until the systems meet the performance requirements established by these specifications.

3.5 DEMONSTRATION

A. Startup Services: Provide the services of a factory-authorized service representative to provide start-up service and to demonstrate and train Owner's representative.

1. Train Owner's representative on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventative maintenance.

2. Review data in the "Operating and Maintenance Manual."

END OF SECTION

SECTION 10800 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide toilet accessories in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Toothbrush/tumbler holder, surface mounted.
2. Liquid soap dispenser, surface mounted.
3. Liquid soap dispenser, lavatory/deck mounted.
4. Combination paper towel/waste receptacle, recessed mounted.
5. Sanitary napkin/tampon vendor, recess mounted.
6. Folding shower seat assemblies, surface mounted.
7. Combination toilet seat cover dispenser/napkin disposal/toilet tissue dispenser, recess mounted.
8. Combination toilet seat cover dispenser/toilet tissue dispenser, recess mounted.
9. Stainless steel grab bars with concealed fastenings.
10. Towel bars, surface mounted.
11. Towel shelf and bar assemblies, surface mounted.
12. Soap dish with bar, recess mounted.
13. Single-roll toilet tissue dispenser, recess mounted.
14. Heavy-duty robe hook assemblies, surfcae mounted.
15. Stainless steel medicine cabinet with mirrored door, recess mounted.

16. Stainless steel tilt mirror assemblies, surface mounted.

17. Stainless steel framed mirrors with shelf, surface mounted.

18. Hinged aluminum and glass shower door assemblies.

B. Related Sections

1. Section 06100 - Rough Carpentry.
2. Section 07900 - Joint Sealers.
3. Section 08800 - Glass and Glazing.
4. Section 09250 - Gypsum Board Assemblies.
5. Section 09300 - Tile.
6. Section 10155 - Toilet Compartments.

1.2 SUBMITTALS

A. Product Data: Provide product data for each toilet accessory item specified, including details of construction relative to materials, dimensions, gages, profiles, method of mounting, specified options, and finishes.

B. Schedule: Indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for the Project.

C. Setting Drawings: Where cutouts are required in other work, provide templates, substrate preparation instructions, and directions for preparing cutouts and for installation of anchorage devices.

1.3 QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish inserts and anchoring devices that must be set in concrete or built into masonry; coordinate delivery with other work to avoid delay.

B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.

1.4 PROJECT CONDITIONS

A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference and to assure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.5 WARRANTY

A. General: The manufacturer shall furnish written 5-year warranty against silver spoilage of mirrors, agreeing to replace any mirrors that develop visible defects within warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, provide toilet and bath accessories as manufactured by Bobrick Washroom Equipment, Inc., or one of the following:

1. A & J Washroom Accessories.
2. American Specialties, Inc.
3. Bradley Corporation.
4. Keystone Shower Door Co.

B. Products: Provide toilet and bath accessories as indicated on the schedules at the end of this Section.

2.2 MATERIALS, GENERAL

A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gage minimum thickness, unless otherwise indicated.

B. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 20 gage minimum, unless otherwise indicated. Surface preparation and metal pretreatment as required for applied finish.

C. Galvanized Steel Sheet: ASTM A 527, G60.

D. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

E. Mirror Glass: Nominal 6.0mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.

F. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

G. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

H. Keys: Unless otherwise indicated, provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six (6) keys to Owner's representative and obtain receipt.

2.3 TOILET TISSUE DISPENSERS

A. Single-Roll Dispenser: Fabricate of stainless steel for recessed mounting, size to dispense 5-inch-diameter core tissue rolls, with a removable heavy-duty spring loaded spindle. Unit shall be type 304, stainless steel, satin finish.

1. Bobrick No. #B-6677.

2.4 GRAB BARS

A. Stainless Steel Type: Provide grab bars with wall thickness not less than 18 gage with snap-flange fittings, and as follows:

1. Mounting: Concealed, manufacturer's standard flanges and anchorages.

2. Clearance: 1-1/2 inches clearance between wall surface and inside face of bar.

3. Gripping Surfaces: Manufacturer's standard nonslip texture, unless otherwise indicated.

4. Size: Outside diameter of 1-1/2 inches.

5. Bobrick No. #B-6806 x sizes and profiles indicated.

2.5 SOAP DISPENSERS

A. Liquid Soap Dispenser, Lavatory Mounted Type: Fabricate for recessed mounting, sized for 34-fluid-ounce minimum capacity; container shall be translucent, shatter-resistant polyethylene. Provide stainless steel piston, springs, and internal parts designed to dispense soap in measured quantity by pump action and with integral check valve to prevent leaking. Cover shall lock to body with concealed locking mechanism.

1. Valve shall operate with less than 5 pounds of force to comply with handicap code.

2. Dispensers shall be equipped with 6" spout.

3. Bobrick No. #B-82265.

B. Liquid Soap Dispenser, Surface Mounted Type: Fabricate for surface mounting, sized for 34-fluid-ounce minimum capacity; container shall be translucent, shatter-resistant polyethylene. Provide stainless steel piston, springs, and internal parts designed to dispense soap in measured quantity by pump action and with integral check valve to prevent leaking. Cover shall lock to body with concealed locking mechanism.

1. Bobrick No. #B-150.

2.6 SANITARY NAPKIN/TAMPON VENDORS

A. General: Fabricate cabinet of stainless steel, not less than 22 gage, all welded construction. Provide door of seamless stainless steel, minimum 18 gage, with returned edges and equipped with tumbler lockset. Provide identification reading "Napkins" and "Tampons" at coin slots; brand name advertising is not allowed. Capacity not less than 30 napkins and 27 tampons.

1. Mounting: Recessed type for nominal 4-inch-thick wall, with stainless steel collar.

2. Operation: Single coin operation (10 or 25 cents), with locked coin box keyed separately from door and other accessory units.

3. Bobrick No. #B-3500.

2.7 FRAMED MIRRORS

A. Mirror Glass: Nominal 1/4" thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and two coats of protective organic coating. Mirrors shall be guaranteed for 5 years against spoilage.

B. Frames: Mirrors shall be framed with angle shapes not less than 0.05 inch (18 gage), with square corners mitered, welded, and ground smooth. Provide in No.4 satin polished finish.

1. Where indicated, provide units with integral stainless steel shelf units; of the full width of the framed mirror.

C. Framed Mirrors with Shelf: Bobrick No. #B-166 by sizes as selected by the Architect.

2.8 PAPER TOWEL DISPENSER AND WASTE RECEPTACLE

A. Recessed Towel Dispensers and Waste Receptacle: Fabricate of stainless steel for nominal 6 inch wall depth, size to dispense not less than 600 C-fold, 800 multifold paper or 1100 singlefold towels without use of special adapters; complete with removable 6.3 gallon molded plastic waste receptacle locked into cabinet. Door equipped with tumbler lockset.

B. Bobrick No. #B-3803

2.9 COMBINATION UNITS

A. Combination Units: Provide combination unit fabricated of stainless steel with seamless 1 inch wide wall flange, door with tumbler lock and continuous piano hinge, toilet seat cover dispenser, toilet tissue dispenser, and leak-proof molded polyethylene napkin disposal; with the following features and capacities:

1. Capacities:

a. Toilet Tissue: Two rolls.

b. Toilet Seat Covers: 500 single or half fold covers.
c. Disposal Unit: 0.8 gallons.

2. Bobrick No. #B-3574.

B. Combination Units: Provide combination unit fabricated of stainless steel with seamless 1 inch wide wall flange, door with tumbler lock and continuous piano hinge, toilet seat cover dispenser and toilet tissue dispenser; with the following features and capacities:

1. Capacities:

a. Toilet Tissue: Two rolls.
b. Toilet Seat Covers: 500 single or half fold covers.

2. Bobrick No. #B-3474.

2.10 TOOTHBRUSH AND TUMBLER HOLDERS

A. Surface-Mounted Type: Fabricate of satin-finished stainless steel unit with 2-1/4 inch diameter hole in center to hold tumbler and two holes on each side to accommodate total of four toothbrushes; rectangular wall bracket equipped with backplate for concealed mounting.

1. Bobrick No. #B-6797.

2.11 SOAP DISH

A. Recess-Mounted Type: Fabricate of satin-finish, stainless steel soap dish with recessed rectangular shell and integral grab bar; equipped with mounting bracket.

1. Bobrick No. #B-6657.

2.12 FRAMED TILT-MIRROR ASSEMBLIES

A. Mirror Glass: Nominal 1/4" thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and two coats of protective organic coating. Mirrors shall be guaranteed for 5 years against spoilage.

B. Mirrors shall be framed with a tapered frame fabricated from 0.04 inch stainless steel, with square corners mitered, welded, and ground smooth. Mirrors shall fabricated to project 4" off wall surface at the top, and 1" from bottom. Provide in No.4 satin polished finish.

C. Bobrick No. #B-293 1830.

2.13 SHOWER ACCESSORIES

A. Single Leaf, Shower Door/Enclosure: Provide extruded aluminum and safety glass shower door/enclosure assemblies. Enclosure framing shall be fabricated from aluminum extrusions with a satin finish (clear anodized); equip doors with a continuous piano hinge and adjustable magnetic catches. Glass shall be 1/4" thick safety glass as selected by the Architect.

1. Keystone No. #45-custom as indicated on the drawings.

B. Bi-Fold Leaf, Shower Door/Enclosure: Provide extruded aluminum and safety glass shower door/enclosure assemblies. Enclosure framing shall be fabricated from aluminum extrusions with a satin finish (clear anodized); equip doors with continuous piano hinges and adjustable magnetic catches. Glass shall be 1/4" thick safety glass as selected by the Architect.

1. Keystone No. #85-custom as indicated on the drawings.

2.14 MISCELLANEOUS ACCESSORIES

A. Surface-Mounted, Towel Shelf with Bar Assemblies: 24 inch long, satin-finished, Type 304 stainless steel tubular (5/16 inch square) bar and rectangular end brackets., and square towel bar. Provide galvanized backplates for concealed mounting.

1. Bobrick No. #B-6767.

B. Surface-Mounted, Towel Bar Assemblies: Length as indicated, satin-finished, Type 304 stainless steel tubular (3/4 inch square) bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

1. Bobrick No. #B-6737 by length indicated.

C. Surface-Mounted, Robe Hooks: Provide vandal resistant, nickel plated brass, heavy-duty robe hooks with concealed mountings.

1. Bobrick No. #B-2116.

D. Medicine Cabinet, Recess Mounted: Fabricate of stainless steel for nominal 4 inch wall depth. Unit shall be fabricated of all-welded construction; provide not less than four adjustable stainless steel shelves, and two used razor blade slots integral with cabinet. Door shall be stainless steel framed assembly with 1/4" thick select float glass mirror; back of door shall a single sheet of stainless steel with integral tooth brush holder. Equip door with continuous piano hinge, door limiting device and magnetic catch assemblies.

B. Bobrick No. #B-398

2.15 FOLDING SHOWER SEAT

A. Heavy-duty hinged seat designed to fold up against wall when not in use. Provide support braces, hinges, frame, and fasteners of Type 304 stainless steel. Construct frame of all-welded tubular construction for maximum strength. Provide seat with configuration and seating surface material as follows:

1. Configuration: L-shaped seat, designed for easy wheelchair access.

2. Seat Material: Phenolic or polymeric composite of either slat type or one-piece construction. Color as selected from manufacturer's standard selections.

3. Bobrick No. #B-5181(left handed); #B-5171(right handed).

2.16 FABRICATION - GENERAL

A. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item by either a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.

B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

C. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

D. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:

1. Provide galvanized-steel backing sheet, not less than 0.034 inch (22 gage) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

E. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theftproof installation, as follows:

1. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install toilet accessory units in accordance with manufacturers' instructions, using fasteners appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.

1. Accessories shall be fastened to 20 gage, 8" wide galvanized metal grounds - coordinate with "Section 09250 - Gypsum Board Assemblies". Toggle bolts thru gypsum board will not be acceptable.

B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.

C. Install grab bars to withstand a downward load of at least 250 lbf, complying with ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

SECTION 10900 - MISCELLANEOUS ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: Provide miscellaneous accessories in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Steel utility shelving.

2. Television/monitor brackets.

B. Related Sections

1. Section 05500 - Metal Fabrications.
2. Section 06100 - Rough Carpentry.
3. Section 09250 - Gypsum Board Assemblies.

1.2 QUALITY ASSURANCE

A. References: Applicable trade association names and titles of general standards are referred to by accepted abbreviations.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, with complete product description, and installation instructions for each item and related component parts for specialty items specified.

B. Shop Drawings: Submit shop drawings showing fabrication and installation of miscellaneous specialties including plans, elevations, sections, details of components, and attachment to other units of work.

1.4 PRODUCT HANDLING

A. Deliver, store and handle miscellaneous specialties in accordance with the manufacturer's recommendations to prevent damage, deterioration or soiling of the items.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include but are not limited to the following:

1. Specified products establish standards of design and quality. Miscellaneous accessories by other manufacturers will be considered provided they meet the design and quality of the specified items.

B. Accessories: Provide specialty items complete, with all accessories required for proper installation and operation.

2.2 STEEL UTILITY SHELVING

A. Manufacturer: Provide the following as manufactured by Ironbound Metal Products, Inc., or approved equal by the following.

1. Penco

B. Provide "Style #LB-2" heavy duty steel shelving system; 30 inches deep by width and heights indicated. Heavy duty steel shelving shall be of the open style with 7 shelves, unless otherwise indicated. Shelving unit to have compression clips, or holes at each corner frame unit capable of one inch incremental shelf positions.

C. Provide manufacturer's standard baked enamel finish.

2.3 TV BRACKETS

A. Manufacturer: Provide the following as manufactured by Triple Platform, or approved equal.

B. Provide the following assemblies:

1. Model #TTPL; Ceiling yoke with optional anti-theft device for 27" monitors.

2. Model #TTPJ; Ceiling yoke with optional anti-theft device for 37" monitors.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examination: Examine adjoining construction and the conditions under which the Work is to be installed. Proceed with the Work after unsuitable conditions have been corrected.

B. Coordination: Provide information and service as necessary for the proper coordination of this Work with the work of other trades.

3.2 INSTALLATION

A. Provide all supporting or attaching devices required for a complete installation. Comply with manufacturer's installation instructions and final shop drawings.

B. Install specialties where shown, plumb, level and in line with adjacent materials. Provide fastenings as required for a rigid, secure installation.

C. At the completion of the Work, test operating devices and demonstrate acceptable operation. Adjust and lubricate devices as necessary.

D. Protect finished surfaces against damage during subsequent construction operations. Touch-up marred and abraded surfaces.

3.3 CLEANING

A. When directed by the Resident Engineer, remove all temporary protection and leave the installations clean and free of any imperfections.

END OF SECTION

Vikonics, Inc.
370 North St. Teterboro, NJ 07608

Security System

Specification 11020

7 World Trade Center, 23rd Floor
Office of Emergency Management

TABLE OF CONTENTS

1.0 STATEMENT OF WORK 1

1.1 General Description 1

1.2 Location 1

1.3 Applicable Specifications 1

2.0 REQUIREMENTS 2

2.1 General Requirements 2

2.2 Contractor Requirements 2

2.2.1 Vault Construction Requirements 2
2.2.2 Security Wall Construction Requirements 2
2.2.3 Special Door Requirements 4
2.2.4 Electromagnetic Filtering Requirements 4
2.2.5 Electronic Security System Specifications and Installation Guidelines 4
Figure 2-1. STANDARD MULTIPLEXER ENCLOSURE MOUNTING 6
Table 2-1. MULTIPLEXER WIRING CONNECTIONS 7
Table 2-2. TYPICAL DEVICE INTERCONNECTIONS 7
Figure 2-2. MULTIPLEXER BOARD PHYSICAL DETAIL 8
Figure 2-3. AMP, INTERNAL VIEW 10
Table 2-3. CABLE ENVIRONMENTS AND RECOMMENDATIONS 11
Table 2-4. TYPICAL AMP COMMUNICATION CABLE CONNECTIONS 11
Figure 2-4. THIRTY-TWO-ZONE CONTROL BOARD ELECTRICAL CONNECTIONS 12
Figure 2-5. AMP COMMUNICATION CABLE CONNECTIONS 13
Figure 2-6. ACS ENCLOSURE MOUNTING 17
Figure 2-7. ACS BOARD AND BATTERY INSTALLATION 18
Table 2-5. ACS TERMINAL BLOCK PIN DESIGNATIONS 20
Figure 2-8. ACS PIN KEYPAD INSTALLATION 24
Reader Heads & Keypads 25
FIGURE 2-9. KEYPAD CARD READER INSTALLATION 26
FIGURE 2-10. SCHEMATIC DIAGRAM OF VRP-5310 MOUNTING 28
FIGURE 2-11. WIRING DIAGRAM OF VRP-5310 29
Table 2-6. INTERFACE CONTROLLER CONNECTOR AND PIN FUNCTIONS 30
Table 2-7. KEYPAD READER CONNECTOR AND PIN FUNCTIONS 30
2.2.6 Close Circuit Television System (CCTV) 31
Table 2-8. CCTV WIRING 32

2.3 Specific Materials to be supplied 34
Table 2-9. ELECTRONIC SECURITY BILL OF MATERIALS 34
Table 2-10. CCTV BILL OF MATERIALS 35

3.0 ELECTRONIC SECURITY TASKS 36

3.1 Electronic Security Wiring Requirements 36

3.2 CCTV Mounting and wiring 36
Table 3-1. CCTV WIRING 36

3.3 Sensor Mounting and Wiring Requirements 36
FIGURE 3-1. END OF LINE RESISTOR WIRING 37
3.3.1 Balanced Magnetic Door Contacts 37
3.3.2 Motion Detectors 37
3.3.3 Smoke Detectors 37
3.3.4 Duress Switch 37
3.3.5 Duress Receiver 38
3.3.6 Portable Duress Alarm 38
3.3.7 Duct Alarms 38
3.3.8 Vibration Sensors 38

3.5 Card Reader and Alarm Wiring Requirements 39
Table 3-2. CARD READER AND ALARM WIRING REQUIREMENTS 39
Table 3-3. SENSOR WIRING REQUIREMENTS 41

1.0 Statement of Work

1.1 General Description

The successful bidder is required to supply and install specialized security equipment where indicated on the drawings. This will involve construction of walls to specifications using specified materials and providing Certificates of Compliance for the materials. Special security doors are to be installed where specified on the drawings. These doors will be supplied with the hardware shown on the drawings. The specified electronic security equipment will be supplied and installed. This consists of electronic sensors, card readers, alarm monitoring equipment, CCTV cameras and monitors, and their associated wiring. All efforts are to be coordinated with other disciplines the Architect, and Vikonics. The scope of work includes the cost of Vikonics to inspect and approve the bidder's efforts, system setup and calibration, database generation, and training of the client.

1.2 Location

The site is located at Seven World Trade Center and covers the entire 23rd floor, part of the 1st and 7th floors, and a radio room on the roof.

1.3 Applicable Specifications

UL 752	Bulletproof Doors
DIAM 50-3	Defense Intelligence Agency Manual
DCID 1/21	Director of Intelligence Directive
	National Electrical Code
	NYC Building Code

2.0 Requirements

2.1 General Requirements

The contractor will supply all materials and labor required to complete the work shown on the drawings. All work is to be performed in accordance with applicable building codes. Materials specified herein (by Manufacturer and Model number) are the only approved materials. All wire used will be UL and NYC approved and as specified. Certain areas will require wire and cables associated with the security system to be run in ridged conduit. The particular wire runs are noted on the wiring tables. All installation is to be performed to Manufacturer's instructions. The contractor shall maintain a set of redline drawings showing any approved deviations from the original contract drawings. The drawings are to be submitted to Vikonics fifteen (15) days after completion of the work.

2.2 Contractor Requirements

The requirements are detailed in the following paragraphs. The contractor must provide evidence of compliance to the requirements. At a minimum, the Contractor is required to check continuity of all cables installed by the Contractor. All work that is to be concealed must be inspected, tested, and approved before concealment. All required tests are to be conducted by the contractor and the results provided with notification that the task is ready for verification. The contractor shall provide a minimum of 24 hours notice of inspections to be performed. All cables must be identified with permanent markers per the numbers in the wiring table. Markers are to be applied 6" from the cable ends and be visible in the terminating enclosure. Service loops (12" minimum in excess of termination lengths) are to be provided at both ends of cables.

System interconnect is shown on Riser Diagram 038Z001.

2.2.1 Vault Construction Requirements

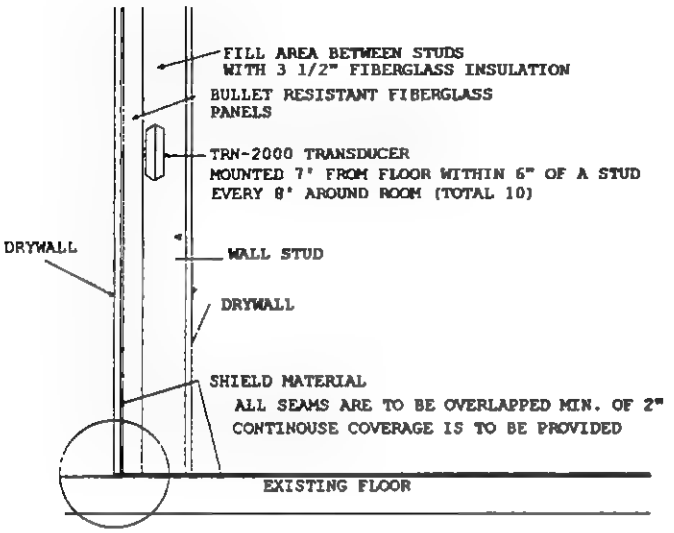
Vault construction will be of steel alloy-type, 1/4" thick, having characteristics of high yield and tensile strength. The metal plates are to be continuously welded to load-bearing steel members of a thickness equal to that of the plates. Floor and ceiling will be of the same construction. The vault shall be equipped with a GSA approved Class 5, Class 6 or Class 8 vault door.

2.2.2 Security Wall Construction Requirements

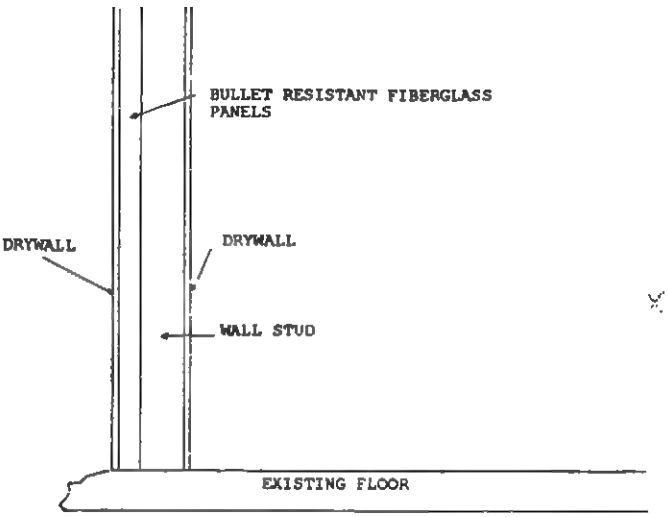
Walls designated on the drawings as security walls are to be constructed from deck to deck. Some walls will be constructed of a bullet resistant material and require EMI shielding. Audio attenuation will also be required in this wall construction as well as sound masking.. TRN-2000 transducers are manufactured by Research Electronics International Cookeville, TN.

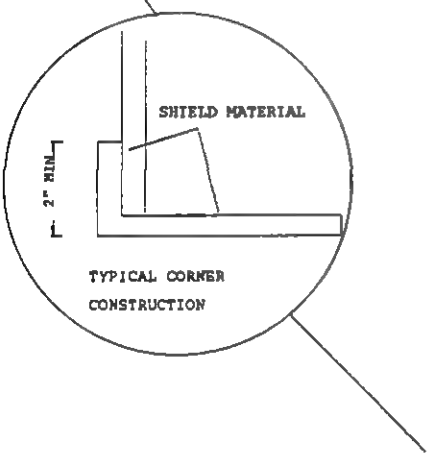
Any openings in the wall larger than 90 square inches must be filled with appropriate intrusion prevention and detection equipment. This includes HVAC ducts and cable entry points. Shielding material and bullet resistant panels are as specified on the drawings. TRN-2000 transducers are manufactured by Research Electronics International Cookeville, TN.

SOUND, EMI AND BULLET RESISTANT WALL CONSTRUCTION

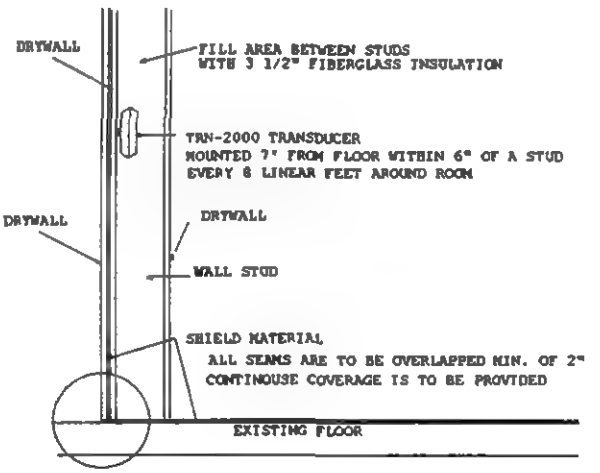


BULLET RESISTANT WALL CONSTRUCTION

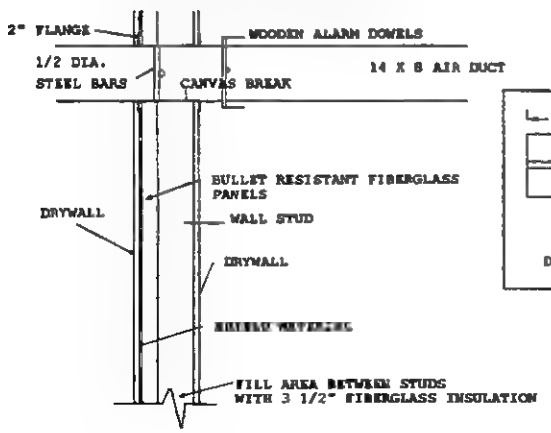




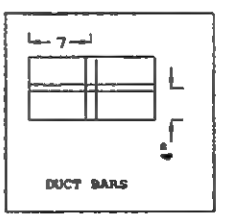
SOUND AND EMI RESISTANT WALL CONSTRUCTION



SOUND, EMI AND BULLET RESISTANT WALL
CONF. RM DUCT ENTRY CONSTRUCTION



1/2" DIA.
STEEL BARS



2.2.3 Special Door Requirements

Special door construction is required where shown on the drawings. The door supplier is listed in the wiring section.

2.2.4 Electromagnetic Filtering Requirements

The area occupied by the Mayor and Commissioner is to be considered a Sensitive Compartmented Information Facility (SCIF). This requires techniques and materials to prevent electromagnetic intelligible emanations from leaving the area. The power line feed entering the area will require an isolation transformer and low pass filters. The shielding materials and the steel vault must be tied to earth ground.

2.2.5 Electronic Security System Specifications and Installation Guidelines

The following paragraphs provide a description of the components that comprise Vikonics' VISIDS Security system. This is included to provide a functional understanding of the system components. Locations for all security devices are shown in Drawings 038L001 and 038L002. Physical sizes and power requirements are shown in the Bill of Materials.

2.2.5.1 The VISIDS System

The VISIDS integrated security systems provides physical security by integrating access/entry control, intrusion detection, visual assessment (closed circuit television) and Photo I.D.

The VISIDS network is an intuitive distributed system with the VISIDS computer serving as the Central Processing Unit (CPU). The CPU, with its integrated software package, controls the network, local subsystems, and all system activities. The VISIDS 3500 can support expanded configurations with multiple operator workstations (VISIDS 3550) and TAC/NCM-B Front End Processors.

The VISIDS 3500 is to be located in the console in Room 23-18. Each of the three VISIDS workstations (VISIDS 3550) are to be located in Room 23-52. See the Table below for wiring requirements.

FROM	
Device	Location
VISIDS 3500	RM 23-18
VISIDS 3550 OT2	RM 23-52
VISIDS 3550 OT3	RM 23-52
VISIDS 3550 OT4	RM 23-52
VISIDS 3500	RM 23-18

TO			
Device	Location	Wire #	Wire Req.
VP-3570 HUB	RM23-52	101	Cat 5 lan Cable
VP-3570 HUB	RM23-52	102	Cat 5 lan Cable
VP-3570 HUB	RM23-52	103	Cat 5 lan Cable
VP-3570 HUB	RM23-52	104	Cat 5 lan Cable
TAC/NCM	RM23-18	105	Phone Cable w/ RJ11 plugs

2.2.5.2 THE TAC-NCM

The TAC/NCM-B series units serve as the front-end processors for the VISIDS central CPU units. The TAC/NCM-B is will be mounted on plywood in Room 23-18.

Typical TAC/NCM Connections	
TAC Polling Channel	Multiplexer J17
RX+ 1 RX– 9 TX+ 11 TX– 10	1 TX+ 2 TX– 3 RX+ 4 RX–

2.2.5.3 VP-2260 Multiplexer

Vikonics' multiplexer collects data from remote terminals (intrusion detection and entry control interfaces) and transmits the data back to the central processor for annunciation, logging, and reporting. The multiplexers will be located in Rooms 23-18 and 23-50 (see Drawing 038L003). Installation procedures are detailed below.

SITE PREPARATION

Be sure the following has been completed before connecting the Multiplexer:

- A dedicated AC circuit (when the transformer will be used) or a Low Voltage Power Supply for the Multiplexer has been installed near the enclosure location.
- Two twisted pairs of wire have been run from the Multiplexer location to the TAC location and to each peripheral location.

MOUNTING PROCEDURES

STANDARD ENCLOSURE MOUNTING

The PC Board is shipped mounted on plastic stand-offs inside the enclosure.

The enclosure is mounted to a wall, inside a secure area, through four (4) mounting holes in the base (see Figure 2-1). If used, the power transformer is mounted either on the side of the enclosure cover or in the ceiling above. See the steps below to mount the enclosure:

1. Unhinge the front panel from the rear panel.
2. Determine a location for the Multiplexer where it can be securely mounted to a wall and have access to an earth ground.
3. Create wire-routing access hole(s) by selecting and carefully removing rear panel and/or bottom panel knock-out disk(s). If necessary, remove the PC board from the rear panel temporarily to protect it from damage during this process.
4. Cut wire chase holes in hollow wall . If mounted on solid wall, holes should be cut in enclosure on bottom for wiring.
5. Connect a 16 AWG or larger size wire with a spade lug to one of the nuts or studs on the back of the rear panel. Connect the other end of the wire to a suitable earth-ground point.
6. Mount the rear panel to the wall using the four 0.196" (5 mm) corner holes. Be sure to use mounting screws that are appropriate for the mounting surface, and to fasten them securely to the wall.
7. Pull wires into enclosure; leave a service loop.
8. Re-Hinge the front panel onto the rear panel.
9. Mount MUX to standoffs if removed earlier.
10. If used, mount the transformer to side of the enclosure or above the ceiling in a secure location (power connections are described later).
11. If the unit is equipped with a tamper switch, the tamper switch must be connected to a local alarm panel.

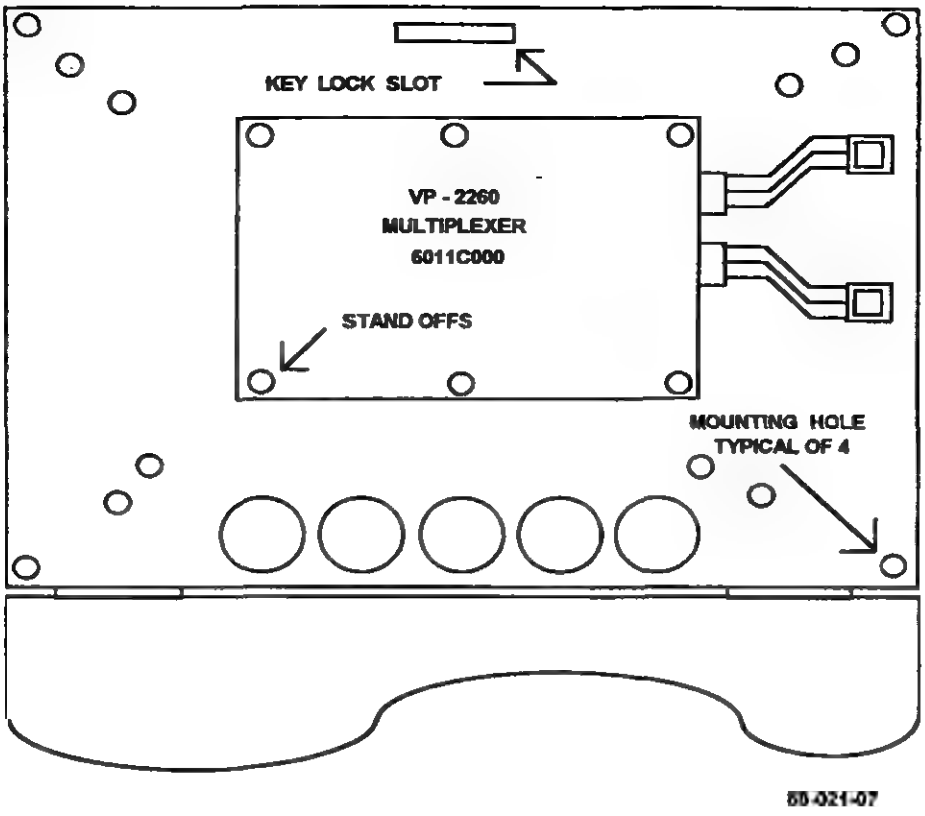


FIGURE 2-1. STANDARD MULTIPLEXER ENCLOSURE MOUNTING

INTERCONNECTIONS

Three types of interconnections are required to install the Multiplexer (see Figure 2-2) as follows:

- Data connections to and from TAC
- Data connections to and from Peripherals
- Power connections to MUX and Transformer or Power Supply.

All wires to and from the Multiplexer are fed through holes at the rear or lower base of the enclosure. These wires are from various peripherals located throughout the facility and from the TAC or Modem. All device connections to the Multiplexer are via 4-pin Molex type connectors. Connections at the TACs and peripheral devices vary; consult the appropriate device manual.

Notes:

1. All Multiplexer interconnect shielded cables should have shields grounded at one end only. Normally, this should be the end of the cable closest to the TAC.
2. Voltage regulators (which normally are mounted prior to delivery) must have the mounting plate thermally connected, but electrically isolated from the enclosure. Nylon screws normally are utilized to secure the regulators.

DEVICE INTERCONNECTIONS

Tables 2-1 and 2-2 provide device wiring connections for the TAC and various peripherals respectively.

POWER CONNECTION

The Multiplexer requires 8 Vac or 12 Vdc power. This is applied to connector J18 Pins 1 and 3 (no polarity) using a 3 pin Molex connector.

TABLE 2-1. MULTIPLEXER WIRING CONNECTIONS

Connector	Pin	Description
J1 to J16		**Peripheral I/O, 20mA Type**
	1	TX+, Transmit Data, Positive
	2	TX–, Transmit Data, Negative
	3	RX+, Receive Data, Positive
	4	RX–, Receive Data, Negative
J17		**TAC I/O, 20mA Type**
	1	TX+, Transmit Data, Positive
	2	TX–, Transmit Data, Negative
	3	RX+, Receive Data, Positive
	4	RX–, Receive Data, Negative
J18		**Power Connection, Low Voltage** ***AC or 12 Vdc***
	1	8 Vac or 12 Vdc/Ground*
	2	No Connection-
	3	8 Vac or Ground/12 Vdc*

*No polarity

TABLE 2-2. TYPICAL DEVICE INTERCONNECTIONS

Typical TAC/NCM Connection	
TAC Polling Channel	Multiplexer J17
RX+ 1 RX– 9 TX+ 11 TX– 10	1 TX+ 2 TX– 3 RX+ 4 RX–
Typical Peripheral Connections **Applies to: ACP, ACS, AMP, and CRI Controller** **(also applies when linking Multiplexers)**	
Peripheral Polling Channel	Multiplexer J1 to J16
RX+ 3 RX– 4 TX+ 1 TX– 2	1 TX+ 2 TX– 3 RX+ 4 RX–

Notes:

1. See specific TAC and peripheral device manuals to confirm device connections and for cable connection type (15 pin D-type, 25 pin D-type, etc.)
2. See specific communication device (modem, line driver, level converter, line security device) manual for device connectors.

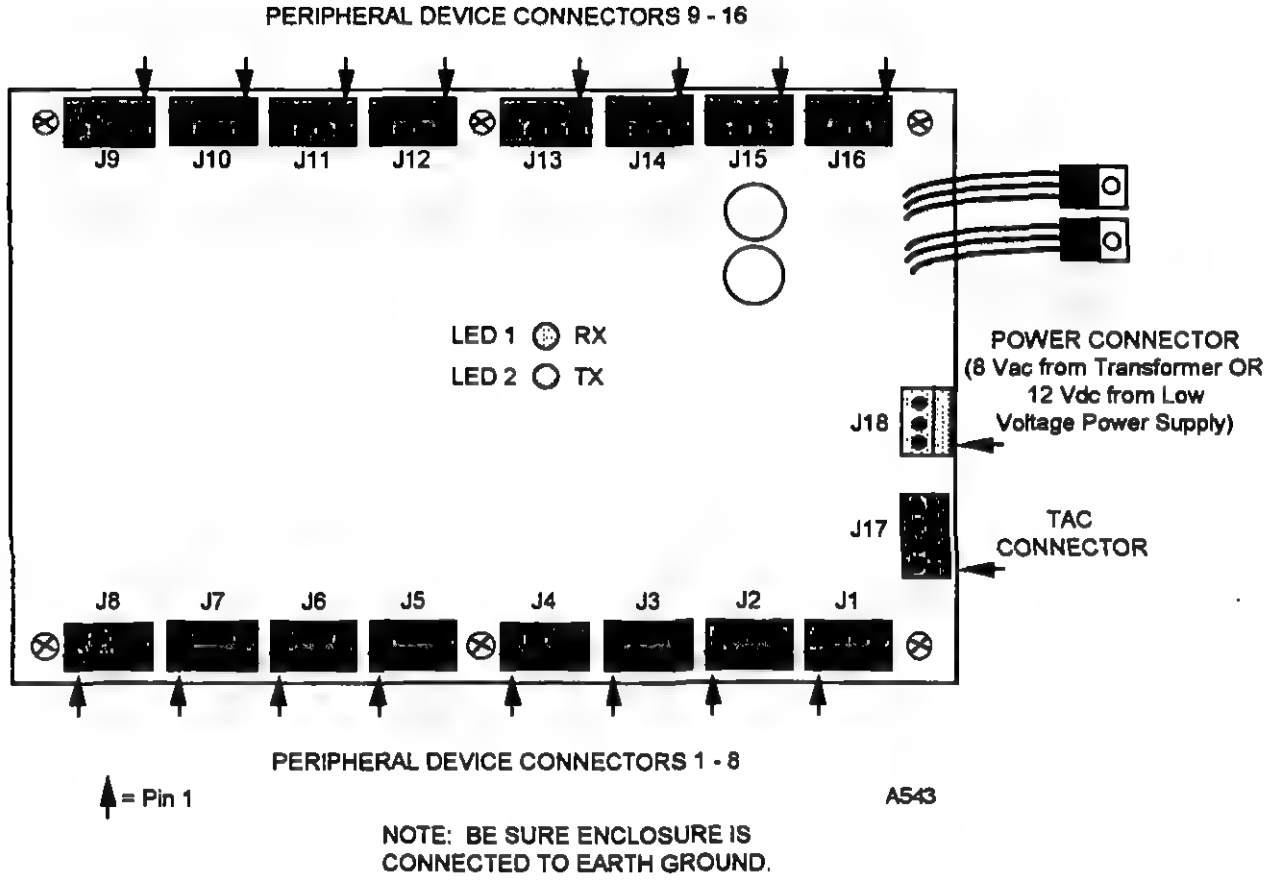


FIGURE 2-2. MULTIPLEXER BOARD PHYSICAL DETAIL

2.2.5.4 Alarm Monitor Panels (VP-2216 & VP-2232)

Vikonics Alarm Monitor Panel (AMP) monitors alarm/sensor zones and reports changes in status to a TAC Front-End Processor. The central processor continually "polls" the alarm panel and a change in status of any alarm contact will send an alarm to the processor. The panel provides line supervision and four (4) relays as outputs. Each zone can be connected to any type of dry contact sensor, which can be provided with Vikonics end-of-line supervision networks. Sensors can include door contacts, motion, and noise or vibration sensors.

Wiring requirements are shown in Table 3-2.

The AMPs will be located in Rooms 23-18 and 23-50 (see Drawing 038L003).

STANDARD-ENCLOSURE MOUNTING PROCEDURE

Refer to Figure 2-3 during the following procedure.

1. Note the polarity of the power jumper wires in their TB9 screw terminals at the top-right corner of the control board, then unscrew them.
2. If the AMP has an enclosure tamper switch, note the control-board alarm-zone input to which the tamper-switch is connected, then unplug it.
3. Unhinge the front panel from the rear panel.
4. Create wire-routing access hole(s) by selecting and carefully removing rear-panel and/or top-panel knock-out disk(s). If necessary, temporarily remove the control board from the rear panel to protect it from damage during this process.
5. Locate the AMP where it can be securely mounted to a wall and have access to an earth ground.
6. Connect a 16 AWG or larger size wire with a spade lug to one of the nuts or studs on the back of the rear panel. (Remove paint to provide good electrical connection.) Connect the other end of the wire to a suitable earth-ground point.
7. Mount the rear panel to the wall using the four 0.196" (5 mm) corner holes. Be sure to use mounting screws that are appropriate for the mounting surface, and to fasten them securely to the wall.
8. Re-hinge the front panel onto the rear panel.
9. Reconnect the enclosure-tamper-switch connector to the control-board alarm-device input.

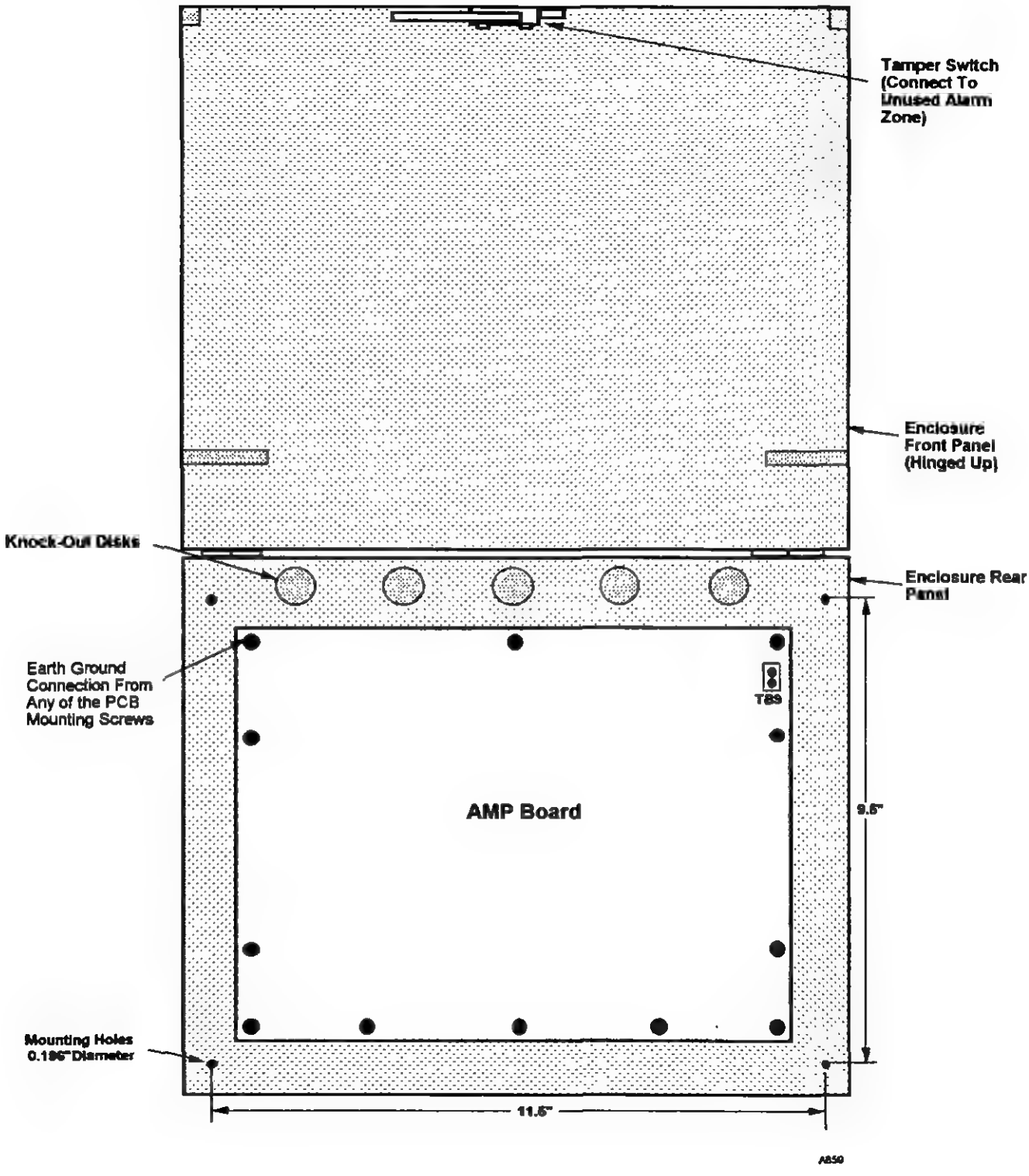


FIGURE 2-3. AMP, INTERNAL VIEW

ELECTRICAL CONNECTIONS

CAUTION: DO NOT connect power wires to the AMP until after all communication and zone-device connections have been made, and all jumper settings have been selected.

Refer to Control Board Electrical Connections Figure 2-4 during the following procedures. Route all cables and wires through the rear-panel knock-out holes. Leave a service loop in all cables and arrange them so that they don't exert any pressure on the circuit board or cables when the enclosure cover is closed.

NETWORK COMMUNICATION WIRES

The AMP communicates with network devices such as multiplexers, modems, Line Security Devices (LISDs or DES Encryptors), and/or TACs via two twisted pairs of wires in a shielded cable. One pair is for transmission (Tx) and the other is for reception (Rx). Different environments require different cable types. Table 2-3 shows four environments and the recommended cable for each.

TABLE 2-3. CABLE ENVIRONMENTS AND RECOMMENDATIONS

Environment	Recommended Cable
Conduit-enclosed, low electrical noise	Belden type 8723 or equivalent
Conduit enclosed, high electrical noise	Belden type 8728 or equivalent
Non-enclosed, low electrical noise	Belden type 88723 or equivalent (plenum rated)
Non-enclosed, high electrical noise	Belden type 87723 or equivalent (plenum rated)

The AMP's Rx and Tx screw-terminal connector TB10 is located at the bottom center of the control board. Connect the wires to TB10 as shown in Figure 2-5: Connect the AMP's TX+ and TX– outputs to the network device's RX+ and RX– inputs respectively, and connect the AMP's RX+ and RX– inputs to the network device's TX+ and TX– outputs respectively.

Table 2-4 shows typical AMP to network device connections; for other network device connections, see the appropriate technical manual.

TABLE 2-4. TYPICAL AMP COMMUNICATION CABLE CONNECTIONS

ACP TB10	to	VP-2260 Multiplexer	or	VP-2260-C Multiplexer	or	TAC/NCM and TAC-2010
Pin 1, Tx+		Pin 3, Rx+		Pin 4, Rx+		Pin 1, Rx+
Pin 2, Tx–		Pin 4, Rx–		Pin 3, Rx–		Pin 9, Rx–
Pin 3, Rx+		Pin 1, Tx+		Pin 1, Tx+		Pin 11, Tx+
Pin 4, Rx–		Pin 2, Tx–		Pin 2, Tx–		Pin 10, Tx–
4-Position Screw Compression Connector		4-Position Crimp Terminal Connector		4-Position 616 Std. Telephone Connector		15-Pin Male D-Connector

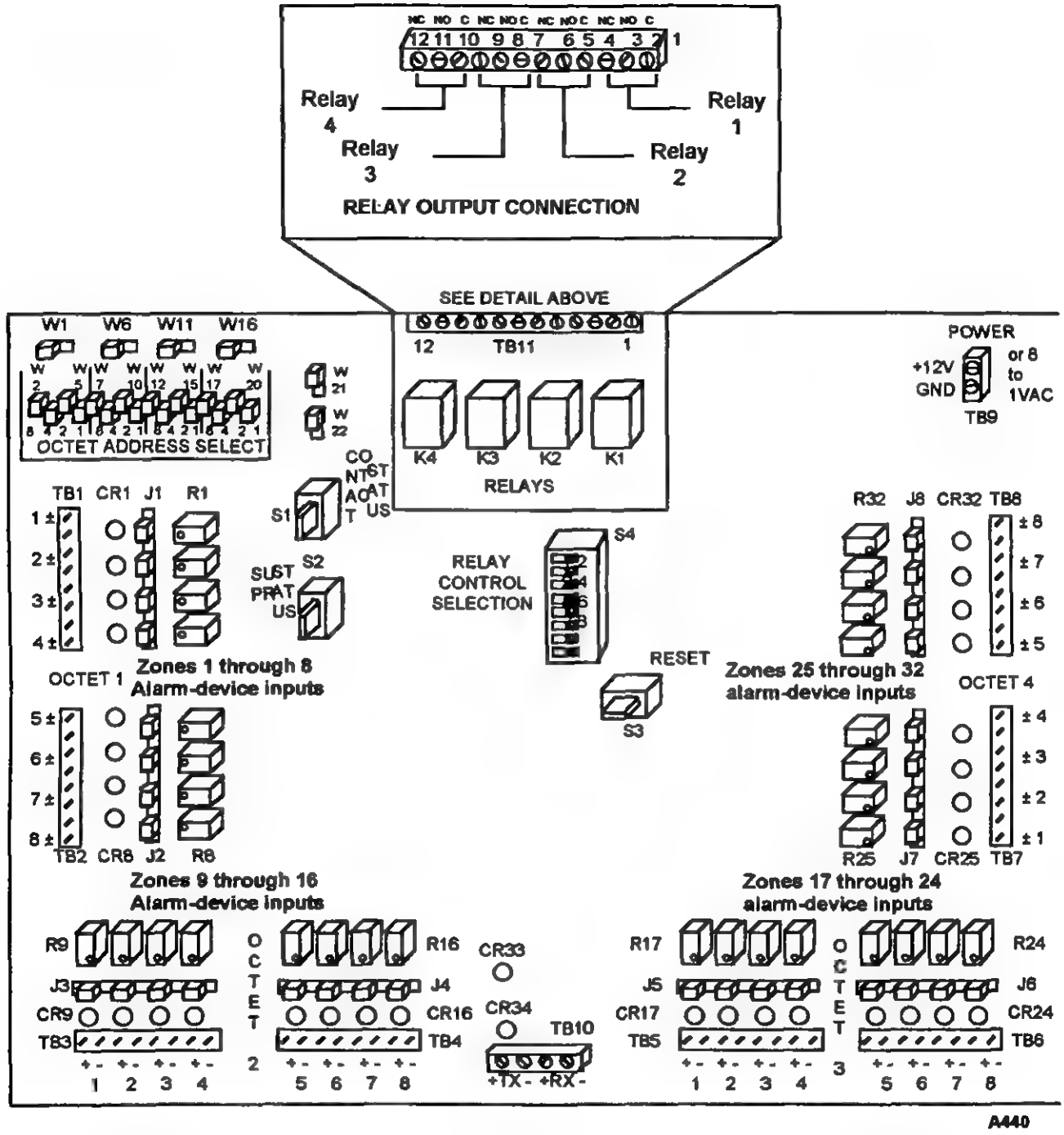


FIGURE 2-4. THIRTY-TWO-ZONE CONTROL BOARD ELECTRICAL CONNECTIONS

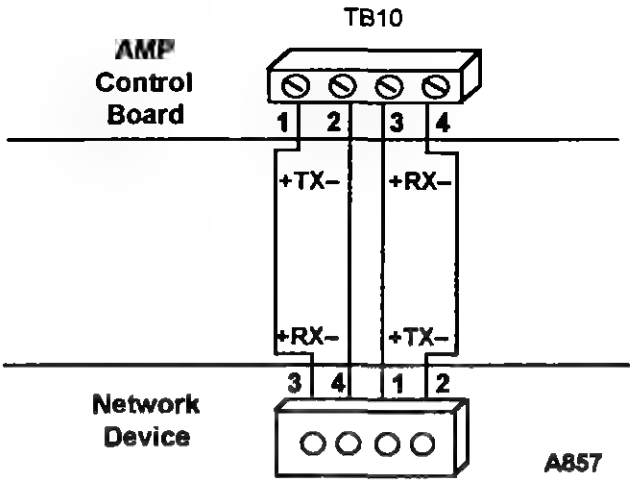


FIGURE 2-5. AMP COMMUNICATION CABLE CONNECTIONS

ALARM-ZONE CONNECTIONS

More than one alarm device can be connected to each zone. When connecting alarm devices to an alarm zone with line supervision, connect no more than one device containing the supervision resistor network to each zone.

Alarm-Zone Connections for 16-Zone AMP (VP-2216)

The alarm devices connect to the 16-Zone AMP control board via terminal blocks on the board's left and bottom-left sides. Connect the alarm devices corresponding to Zones 1 through 8 to Octet 1 (TB1 and TB2) on the board's left side, and the devices corresponding to Zones 9 through 16 to Octet 2 (TB3 and TB4) on the board's bottom-left side.

Alarm-Zone Connections for 32-Zone AMP (VP-2232)

The alarm devices connect to the 32-Zone AMP control board via terminal blocks on the board's left, bottom-left, bottom-right, and right sides. Connect the alarm devices corresponding to Zones 1 through 8 to Octet 1 (TB1 and TB2) on the board's left side, the devices corresponding to Zones 9 through 16 to Octet 2 (TB3 and TB4) on the board's bottom-left side, the devices corresponding to Zones 17 through 24 to Octet 3 (TB5 and TB6) on the board's bottom-right side, and the devices corresponding to Zones 25 through 32 to Octet 4 (TB7 and TB8) on the board's right side.

RELAY CONNECTIONS

The detail view of the relay connectors in Figure 2-4 shows the three possible connection points for each of the relays:

C = Common – always connect to one wire

NO = Normally Open – connect second wire if device is to be "on or connected" when relay is energized – that is, during an abnormal condition such as an alarm or panel off-line condition

NC = Normally Closed – connect second wire if device is to be "on or connected" when relay is not energized – that is, during a normal condition.

Note: NO and NC refer to the relay output with the relay coil in the de-energized condition.

During normal on-line operation, the relays are de-energized and the normally closed (NC) contact is connected to common (C). Then, depending on the switch configuration shown later, when relays are programmed for Local AMP control and certain events occur, the relays are energized and the normally open (NO) contact is connected to common (C). This means that, for example, if you want a siren to sound only when one of the specified events occurs, you would connect the siren wires to the "C" and "NO" terminals.

Relays also can be controlled via the central CPU.

2.2.5.5 Alarm Control Subsystem (ACS)

The ACS is an IDS interface designed for areas where remote secure/access capability is required *and* there is a need to know *who* placed the area into secure/access. The ACS is continuously "polled" by the IDS system software at a command center to determine current status. Any change of status of a sensor or a secure/access (S/A) device is immediately reported to the ACS and to the integrated security system at a command center.

Each zone can be connected to a dry contact sensor equipped with a Vikonics end-of-line device (VA-055); this provides the necessary components for alarm zone line supervision. The standard ACS model includes a tamper-protected enclosure, low voltage power supply, and a secure/access PIN keypad.

The ACS's will be located on the 23rd floor in Room 23-16, in the Radio Room on the roof, and in the Water Storage Room on the 7th floor. Conduit from the 7th floor and the roof to the 23rd floor will be provided but is not included in the Security Specification.

2.2.5.6 Intelligent Secure/Access Keypad (VP-1064)

The keypad device allows personnel to access and secure certain alarmed areas locally from within an alarmed area. Each keypad device will be wall mounted in a 4x4 gang box and conduit to be run to the ACS.

INSTALLATION OVERVIEW

Physical and electrical installation of the ACS consists of four main parts:

1. Physical installation and assembly of the ACS and interconnection of the sensors, relays, keypad and power with the ACS

2. Installation of the keypad

3. Programming of the ACS parameters via on-board DIP switches, jumper wires, and the keypad

4. Initial power-up, calibration, and troubleshooting.

Before beginning installation, determine the following:

1. Where the sensors and relay controlled devices (if any) will be installed, where in the protected area the ACS will be installed, where the keypad will be installed and how the devices will be connected (cable, conduit, etc.).

2. What type of communication cable will be required for the communication link; see typical choices below:

Environment	Recommended Cable
Conduit-enclosed, low electrical noise	Belden type 8723 or equivalent
Conduit-enclosed, high electrical noise	Belden type 8728 or equivalent
Non-enclosed, low electrical noise	Belden type 88723 or equivalent (plenum rated)
Non-enclosed, high electrical noise	Belden type 87723 or equivalent (plenum rated)
Conduit-enclosed fiber	Belden type 225702; 227712 or equivalent
Non-enclosed fiber	Belden type 225851; 225872; 227861; 227822 or equivalent (plenum rated)

Unpack the units and verify that the necessary items have been received in good condition. Note that the ACS is shipped in several parts to prevent damage. The ACS board is shipped in protective packing material within the enclosure. The keypad and battery are each shipped separately. Necessary ACS hardware (for securing the board and battery) is provided in a kit.

ACS INSTALLATION AND ASSEMBLY

The standard ACS is provided in a steel enclosure. Follow the procedures below when installing the standard enclosure unit:

1. Unlock and open the ACS enclosure cover.
2. Remove the ACS printed circuit board from the enclosure. Note that the tamper switch, AC input and battery terminal blocks are pre-wired.
3. Determine a location where the ACS can be securely mounted and where the conduit can be fitted properly.
4. Prepare wall/mounting material (obtain proper hardware and reinforcing material if necessary) such that the fully configured unit, which can weigh up to 20 pounds, can be securely fastened.
5. Determine the locations for the mounting hardware (see Figure 2-6).
6. Mark and knock-out or drill conduit entry location on enclosure.
7. Install conduit fittings.
8. Mount enclosure to wall — be sure it is securely fastened.
9. Install conduit and pull sensor, communication, keypad, relay controlled devices, and power wires into enclosure. Leave service loop.
10. Refer to Figure 2-7 and install ACS board on mounting plate using supplied hardware (eight total #6-32 x 1/4 " screws).
11. Connect the wires (yellow) from TB1 to the tamper switch NO and C connection points.
12. Connect the power wires (orange) from TB12 to the upper/outer (secondary) F and S connection tabs of the transformer. **(Caution: Do NOT connect the 115 Vac power line wires at this time.)**
13. Install battery hold down bracket to the bottom section of the mounting plate as follows:
    a. Screw 3.5" threaded rod into center hole in mounting plate
    b. Install lock washer and hex nut to secure rod in position on plate

c. Install hex nut, lock washer, and nut near top of rod.

14. Install battery in position.

15. Insert "Z" bracket onto threaded rod. Screw standoff onto threaded rod. Adjust height of upper hex nuts and install standoff such that bracket holds battery tightly.

Do NOT connect battery at this time.

16. Connect the alarm/sensor wires to the + and – screw terminals of each of the terminal blocks as defined below:

a. TB3 — Alarms 1 to 4 (pins 1 to 8)
b. TB4 — Alarms 5 to 8 (pins 1 to 8)
c. TB5 — Alarms 9 to 12 (pins 1 to 8, ACS-16; labeled S/A 1 to 4 on PCB)
d. TB6 — Alarms 13 to 16 (pins 1 to 8, ACS-16; labeled S/A 5 to 8 on PCB).

Notes:

1) Table 2-5 shows the pin designations for all ACS connectors.
2) For ease of installation, remove the terminal blocks (orange blocks) from the ACS board, make wire connections, and press the blocks onto the board.
3) Be sure the end-of-line resistor networks are installed on the sensors if line supervision will be enabled.

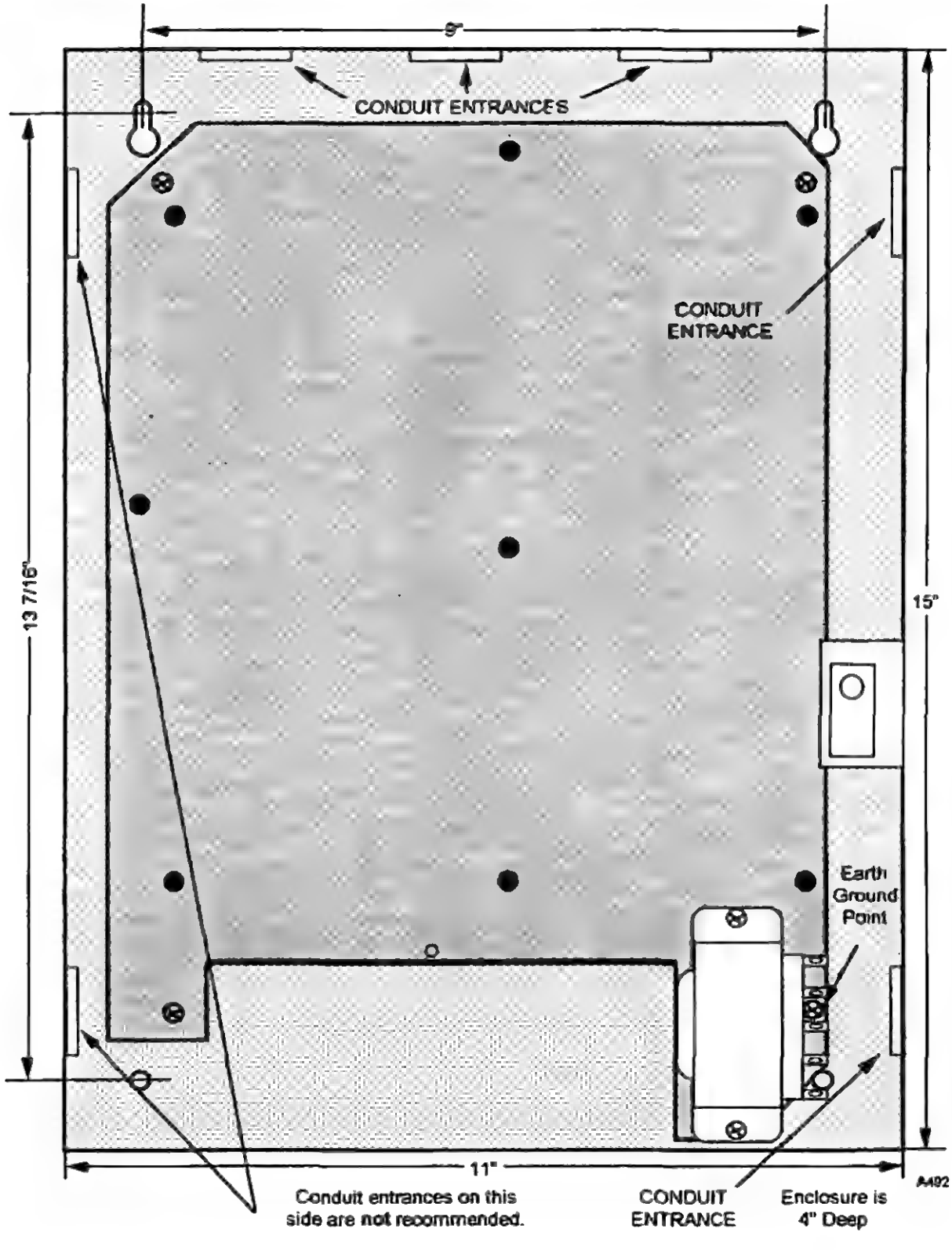


FIGURE 2-6. ACS ENCLOSURE MOUNTING

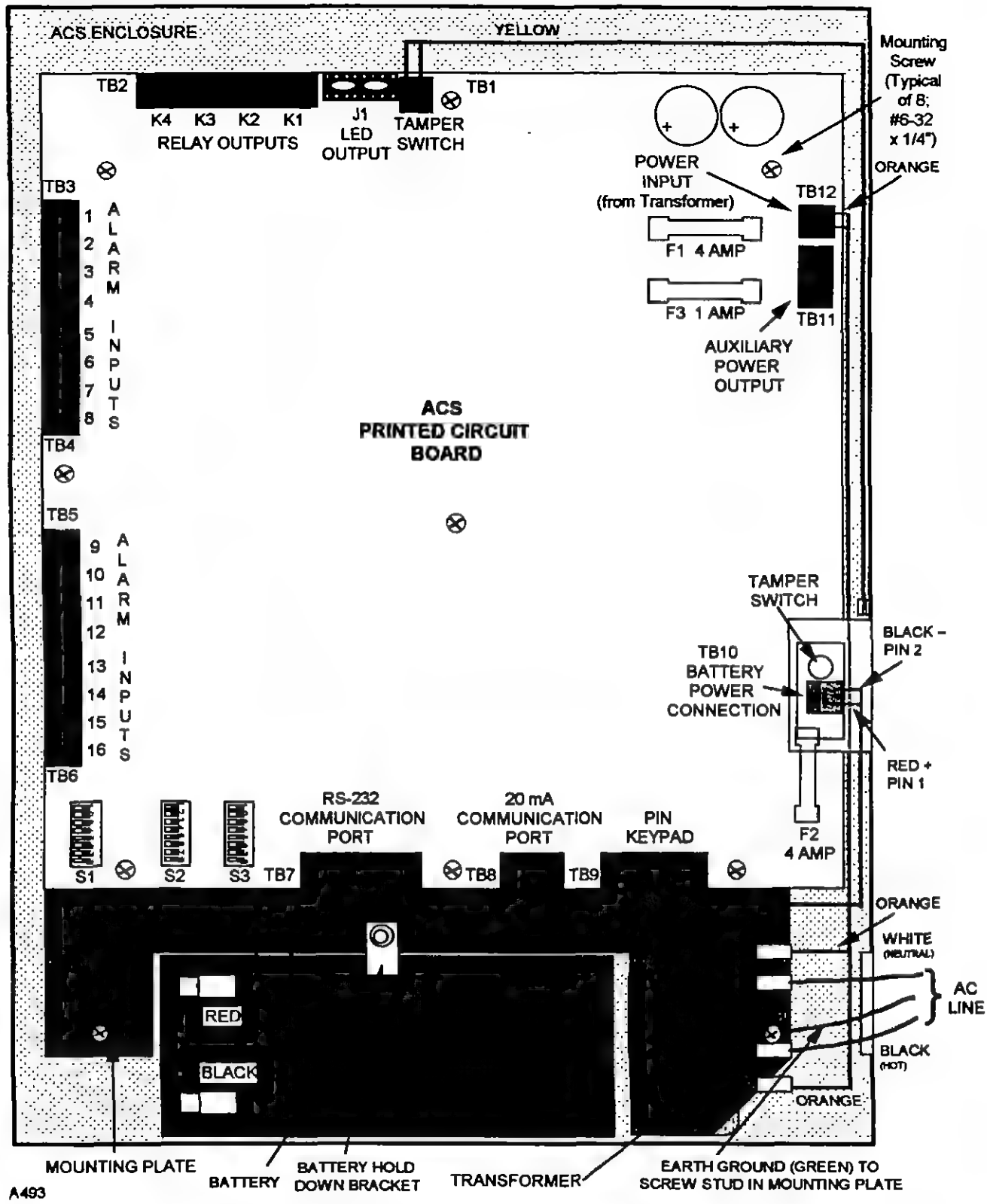


FIGURE 2-7. ACS BOARD AND BATTERY INSTALLATION

17. Connect the appropriate communication link cable: 20 mA current loop to TB8 or RS-232 to TB7. If using a 20 mA current loop interface connect the two-twisted pair as follows:

ACS	TB8	Multiplexer	or	TAC/NCM
1	TX+	RX+ 3		RX+ 1
2	TX-	RX- 4		RX- 9
3	RX+	TX+ 1		TX+ 11
4	RX-	TX- 2		TX- 10

See Table 2-5 if the RS-232 channel (TB7) is used.

18. *Install the PIN keypad as described below.*

19. Connect the cable for the PIN Keypad wires to TB9 as follows:

ACS TB9	SIGNAL	KEYPAD TB1
1	Clock	8
2	Data	5
3	Red LED	6
4	Green LED	7
5	+5 Vdc	3
6	Logic Ground	4
7	Tamper	2
	Earth Ground	1

20. Connect the relay output wires, if used, to the appropriate pins of TB2 as follows:

C = Common – always connect one wire
NO = Normally Open – connect second wire if device is to be "on or connected" when relay is energized — that is, during an abnormal condition such as an alarm or panel stand-alone operation condition
NC = Normally Closed – connect second wire if device is to be "on or connected" when relay is not energized — that is, during a normal condition.

Note: NO and NC refer to the relay output with the relay coil in the de-energized condition.

During normal on-line operation, the relays are de-energized and the normally closed (NC) contact is connected to common (C). Then, depending on the switch configuration shown later, when certain events occur, the relays are energized and the normally open (NO) contact is connected to common (C). This means that if you want a siren to sound only when one of the specified events occurs, you would connect the siren wires to the "C" and "NO" terminals.

21. If necessary, connect the power wires from remote sensors requiring DC power input to TB11. The ACS provides nominal 14 Vdc (up to 23 Vdc when operating from AC line power, down to 9 Vdc when operating from battery back-up nearing the discharge condition). The total current draw of the devices connected to this terminal block must be 400 mA or less; otherwise, the battery backup time will be reduced. Either or both outputs can be used to supply a total of 400 mA of power. Two power connections are possible via TB11:

Pin 1:	14 Vdc	Pin 3:	Ground
Pin 2:	14 Vdc	Pin 4:	Ground

TABLE 2-5. ACS TERMINAL BLOCK PIN DESIGNATIONS

Terminal Block	Pin	Description
TB1		Tamper Switch Input
	1	Tamper Switch +
	2	Tamper Switch –
TB2		Relay Outputs
	1	Relay 1 (K1) C
	2	Relay 1 (K1) NO
	3	Relay 1 (K1) NC
	4	Relay 2 (K2) C
	5	Relay 2 (K2) NO
	6	Relay 2 (K2) NC
	7	Relay 3 (K3) C
	8	Relay 3 (K3) NO
	9	Relay 3 (K3) NC
	10	Relay 4 (K4) C
	11	Relay 4 (K4) NO
	12	Relay 4 (K4) NC
TB3		Alarm Zone Inputs 1 to 4
	1	Alarm 1 + Signal
	2	Alarm 1 – Return
	3	Alarm 2 + Signal
	4	Alarm 2 – Return
	5	Alarm 3 + Signal
	6	Alarm 3 – Return
	7	Alarm 4 + Signal
	8	Alarm 4 – Return
TB4		Alarm Zone Inputs 5 to 8
	1	Alarm 5 + Signal
	2	Alarm 5 – Return
	3	Alarm 6 + Signal
	4	Alarm 6 – Return
	5	Alarm 7 + Signal
	6	Alarm 7 – Return
	7	Alarm 8 + Signal
	8	Alarm 8 – Return
TB5		Alarm Zone Inputs 9 to 12*
	1	Alarm 9 + Signal
	2	Alarm 9 – Return
	3	Alarm 10 + Signal
	4	Alarm 10 – Return
	5	Alarm 11 + Signal
	6	Alarm 11 – Return
	7	Alarm 12 + Signal
	8	Alarm 12 – Return

* Labeled on circuit board as S/A inputs 1 to 4

Table 2-5. ACS TERMINAL BLOCK PIN DESIGNATIONS
(continued)

Terminal Block	Pin	Description
TB6		Alarm Zone Inputs 13 to 16 *
	1	Alarm 13 + Signal
	2	Alarm 13 – Return
	3	Alarm 14 + Signal
	4	Alarm 14 – Return
	5	Alarm 15 + Signal
	6	Alarm 15 – Return
	7	Alarm 16 + Signal
	8	Alarm 16 – Return
TB7		Serial Communication (Polling) Port
	1	Earth Ground
	2	TX (Output)
	3	RX (Input)
	4	RTS (Output)
	5	CTS (Input)
	6	VB - Not Used
	7	Signal Ground
	8	V+ (10 V @ 5 mA)
TB8		20 mA Communication (Polling) Port
	1	TX+
	2	TX -
	3	RX+
	4	RX-
TB9		PIN Keypad Port
	1	Clock Output
	2	Data Input
	3	Red LED Drive
	4	Green LED Drive
	5	+5 Vdc Output
	6	Signal Ground
	7	Tamper Input
TB10		Battery Power Input
	1	Red + Input
	2	Black – Input
TB11		Auxiliary Power Output
	1	+ 14 Vdc (+9/- 5 Vdc)
	2	+ 14 Vdc (+9/- 5 Vdc)
	3	Return
	4	Return
TB12		AC Power Input
	1	Transformer Secondary #1
	2	Transformer Secondary #2

* Labeled on circuit board as S/A inputs 5 to 8

POWER CONNECTIONS

1.When the unit is ready for operation (i.e., to be connected to acc. power), connect the battery wires from TB10 as follows:

a. Red to Positive (+) battery terminal (TB10 Pin 1)
b. Black to Negative (–) battery terminal (TB10 Pin 2).

2.Connect earth ground to the mounting plate screw just to the right of the transformer.

3.Connect 120 Vac power input as follows:

a. Neutral (white) to lower/inner (primary) F connection tab of the transformer
b. Hot (black) to lower/inner (primary) S connection tab of the transformer.

PIN KEYPAD INSTALLATION

The PIN Keypad (VP-1064) is supplied with a faceplate suitable for mounting on a double-gang electrical box and with suitable mounting hardware (security screws). The PIN keypad can be installed on a standard double-gang box that has been recessed into the wall for a flush mount (or hidden wiring) installation. The keypad also can be installed on a "weatherproof" type double-gang box that has been installed on the wall for a surface (or exposed conduit) installation. The weatherproof box may also be used in post mount installations. After the double-gang box has been installed and the interconnecting cable (8 wires) has been brought into the box, install the keypad in accordance with Figure 2-3 and the steps below:

1.Set the keypad programming selections as described below.

2.Connect the routing wires from the ACS into the terminal block connector (TB1) of the keypad positions 2 through 8, as described in Item 19 above and per "Detail A" of Figure 2-8. Connect TB1 pin 1 to earth ground (rod or pipe).

3.Secure the keypad to the double-gang box using the supplied security screws. Ground the faceplate to earth ground using a wire connected to one of the security screws. Note: Before tightening screws, check that tamper switch trips as plate is positioned and removed from box; if necessary, gently bend tamper switch arm for proper operation.

PIN KEYPAD PROGRAMMING

PIN keypad programming should be accomplished prior to installation of the keypad. This programming determines the PIN set (keycode) to be used and the number of PIN entries that a user can attempt before generating an alarm.

PIN Set Selections (Keycodes)

Five sets of PINs (Personal Identification Numbers) are issued for each installation. The PIN assigned to each user is the four or five digit number that the user must enter on all PIN keypads in that system when securing/accessing the controlled areas (in addition to his/her user number). Five different sets of PINs are issued to allow the management of the facility to maintain security by changing the PIN set being used. The PIN set can be changed for specific PIN keypads (that is, some keypads can be configured for one PIN set and others for a different PIN set), or the PIN set can be changed for all keypads if there is a reason to suspect a security breach.

The PIN listing is shipped under separate cover to the security system manager, who should keep it in a secure location. The security manager then decides which of the five sets of PINs to use.

A copy of the selected PIN set should be given to the badging officer so that the correct PIN can be given to the users when they are assigned their user number and PIN.

To select the desire PIN set (1 to 5), use the 10-position switch (shown in Figure 2-8), located on the back of the PIN keypad board. An access hole is provided in the keyboard I/O board.

Keypad PIN Entry Attempts Setting

Depending on the PIN keypad set-up, the number of times a user can attempt to enter his/her PIN before an alarm is generated, is either 3 or 1; 1 is the default setting. Note: This applies to correct user number entries with incorrect PIN entries. This choice is set at a jumper wire located on the back of the keypad board (as described below. The I/O board must be removed from the keypad board to access the jumper wire.

Set Jumper ON:	Number of PIN Entry Attempts Before Alarm Occurs:
Middle and bottom pins	1
Middle and top pins	3

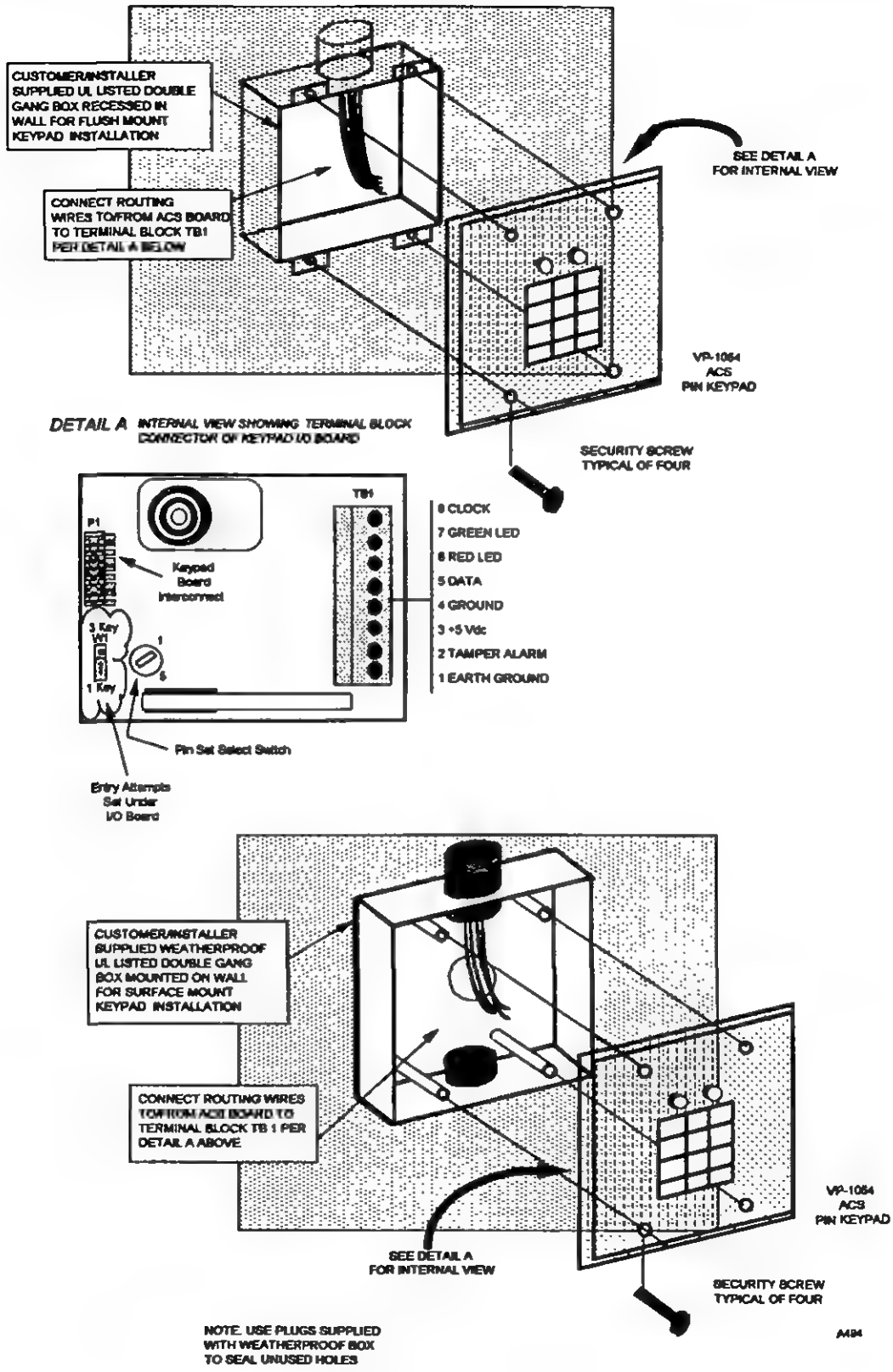


FIGURE 2-8. ACS PIN KEYPAD INSTALLATION

2.2.5.7 Card Reader Subsystem

Card Reader Interface (VRU-2004)

Five card reader interfaces (CRI) are to be installed – 3 in Room 23-18; 2 in Room 23-50. Wiring requirements are shown in Table 3-2.

The CRI also is capable of monitoring the door by way of a door contact that notifies the CRI whether the door is open or closed. The CRI can also be used with an egress button or other device, such as a motion detector, allowing users to exit from the area without the use of another reader.

Reader Heads & Keypads

The VRP-5310 Proximity Card Reader Head, with or without a VRI-2130 Keypad, is mounted to a double gang electrical box (surface or flush mount). The unit is powered from the card reader interface.

INSTALLATION OVERVIEW

Physical and electrical installation of the Card Reader Subsystem consists of three main parts:

1. Installation and configuration of the card readers and associated door hardware.
2. Assembly and installation of the interface controller.
3. Interconnection of the power, reader, and door hardware wiring to the interface controller.

Before beginning installation, determine the following:

1. Where the readers will be installed, where in the protected area the interface enclosure will be installed, and how the units will be connected (cable, conduit, etc.).
2.
2. Which model interface controller is being installed (two or four reader model) and how many readers will be connected. Unpack the units and verify that all necessary items have been received in good condition. Note that the interface controller is shipped in several parts to prevent damage.

3. How far – in terms of cable – the readers will be from the interface controller.

4. What type of power supply will be used for the interface controller, card reader, and door locking mechanism: Stepdown Transformer or Low Voltage Power Supply (LVPS-20/40); and where the power supply(ies) will be located. Note that the power cable to the door control hardware should be run separately from the communication cables.

5. The mounting locations and overall layout of the door hardware such as the door position sensor (for example, balanced magnetic switch) and the door control hardware (for example, door strike or magnetic lock). Refer to the detail drawings typically supplied as part of the installation package for additional information describing your specific installation (typically, detail drawings are contracted for and included with larger security installations).

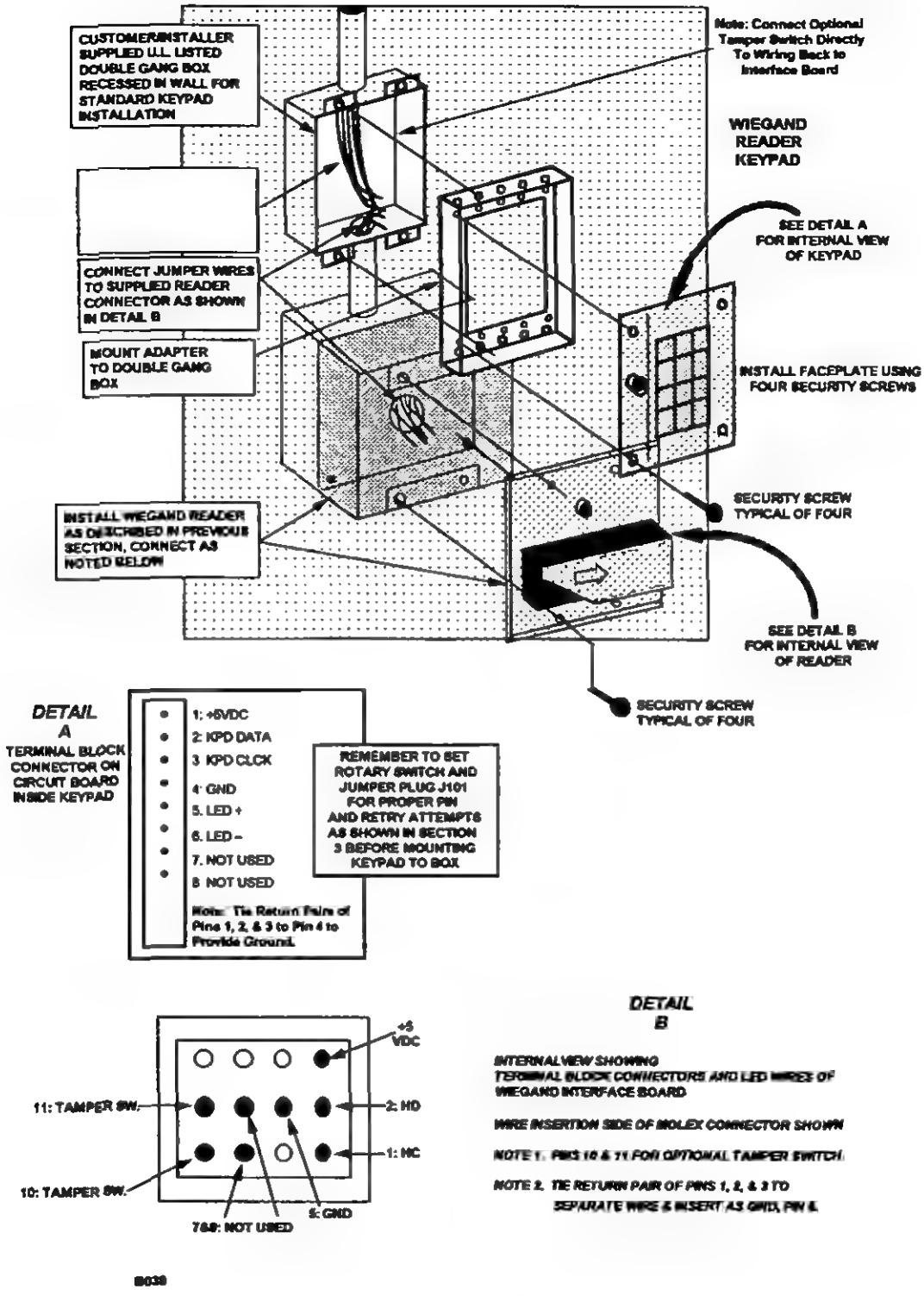


FIGURE 2-9. KEYPAD CARD READER INSTALLATION

STANDARD READER (VRP-5310) INSTALLATION.

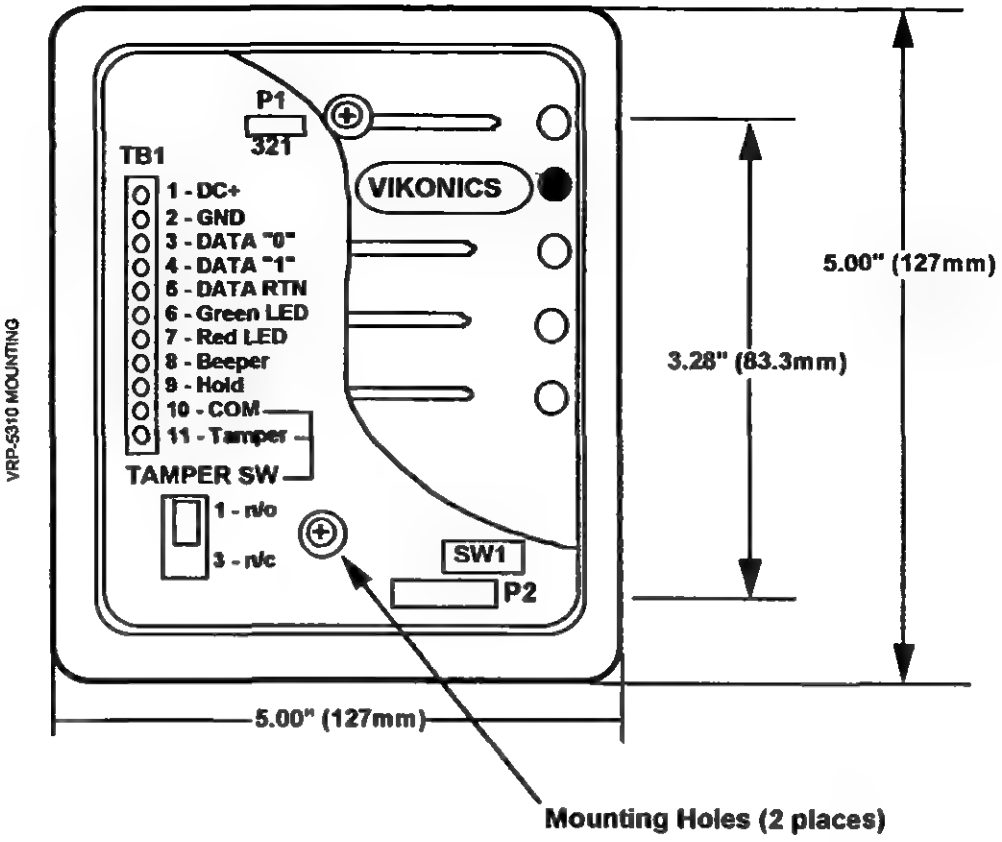
This head is intended to be surface mounted on a wall. The head can be mounted directly on metal with only a slight decrease in read range but must not be framed in by a metal enclosure.

1.) See Figure 2-10 for mechanical dimensions of the head and mounting hole pattern. also, note the required hole for the pigtail wiring from the back of the head.

2.) See Figure 2-11 for detailed interconnect. This wiring should not be in the same conduit as A.C. power lock power (12" separation is desirable).

3.) Again, using the schematic diagram Figure 2-11, finish the interconnect to the card reader interface (VRU-200X).

4.) Lastly, apply power to the system. the head will beep a few times, indicating that it powered up correctly and the LED will glow amber.



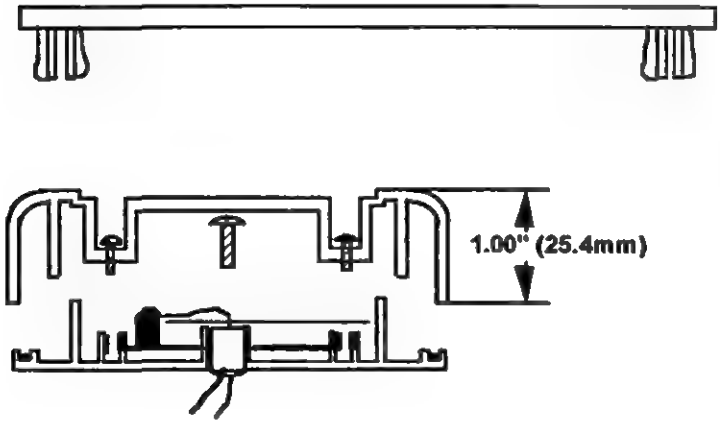


FIGURE 2-10. SCHEMATIC DIAGRAM OF VRP-5310 MOUNTING

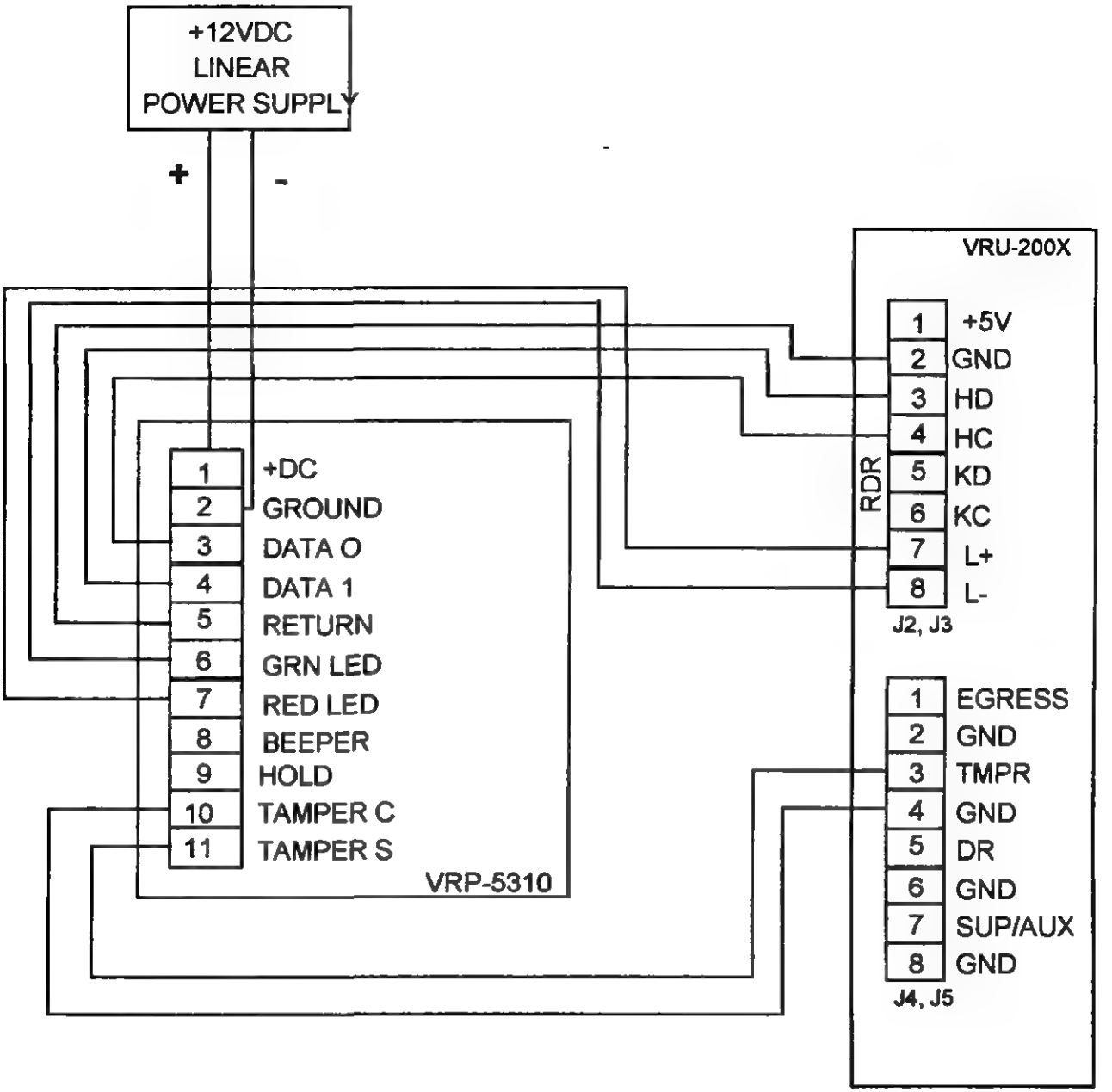


FIGURE 2-11. WIRING DIAGRAM OF VRP-5310

Connect the interface controller communication line to the Multiplexer (or TAC). Normally, a 20 mA current loop interface from connector J7 is used. The required cable consists of two-twisted pairs. Connect the communication cable wires to J7 of the interface controller as shown below:

J7 to	Multiplexer
Pin 1, Tx+	Pin 3, Rx+
Pin 2, Tx–	Pin 4, Rx–
*Pin 3, Rx+	Pin 1, Tx+
*Pin 4, Rx–	Pin 2, Tx–

TABLE 2-6. INTERFACE CONTROLLER CONNECTOR AND PIN FUNCTIONS

CONNECTOR DESIGNATION	PIN NUMBER	FUNCTION
Power – J10	1	+5 Volt D.C. Out
	2	Signal Ground
	3	A.C. In / +12 VDC. Out
	4	A.C. In / D.C. Ground
	5	V Unregulated
	6	Earth Ground
	7	Signal Ground
	8	V Battery
Alarm / Door J4, J5, J5 (Exp), J6 (Exp)	1	Egress
	2	Signal Ground
	3	Tamper
	4	Signal Ground
	5	Door Contact
	6	Signal Ground
	7	Supervision / Auxiliary
	8	Signal Ground
Door Relays – J1, J4 (Exp)	1	NC
	2	COM
	3	NO
	4	NC
	5	COM
	6	CO
	7	Tamper
	8	Signal Ground
	7 (EXP)	+5V
	8 (EXP)	Signal Ground

TABLE 2-7. KEYPAD READER CONNECTOR AND PIN FUNCTIONS

CONNECTOR DESIGNATION	PIN NUMBER	FUNCTION
J100	1	+5 Vdc
J100	7	Not/Used/Reader Data*
J100	8	Not/Used/Reader Strobe*
J100	2	Keypad Data
J100	3	Keypad Clock
J100	4 together and connect to PIN 4	Ground – Tie Grounds
J100	5	LED+**
J100	6	LED-**

* Not Used by Keypad Jumper to Card Reader

** Jumper to Card Reader if Card Reader LED operation desired (NOT required)

2.2.5.8 Power Supplies

The LVPS-40 power supply provides 12 VDC @ up to eight (8) AMPs for powering Alarm Panels and sensors.

The procedure below assumes that no previous connections to AC power or external devices have been accomplished. Be sure that the **AC line circuit breaker is OFF and that the LVPS-40 On/Off switch is OFF.**

1. Connect the batteries to the power supply using the wire harness leads as shown. Be sure to connect the **RED wires to the positive (+) terminals** and the **BLACK wires to the NEGATIVE (-)** terminals of the batteries. **Note:** The Green LEDs (CR3 and CR4) that indicate power is available for the loads should both light.

2. Connect the output lines to the loads. Up to six loads may be connected via terminal blocks TB3 and TB4 with no more than a 4.5 Amp load connected to either terminal block. Terminals 1, 2, and 3 of TB3 and TB4 provide "12 Vdc" (11.5 Vdc) outputs and terminals 4, 5, and 6 provide the common connections.

3. If applicable, connect the Alarm (AC/Power Supply Fail) and Low Battery signals to the corresponding ACP or AMP. Terminal block TB5, terminals 3 and 4 are for the Alarm signal and terminals 5 and 6 are for the Low Battery circuits.

WARNING: BE SURE THAT THE AC LINE CIRCUIT BREAKER IS OFF TO AVOID ELECTRICAL SHOCK.

4. Be sure the LVPS-40 On/Off switch is OFF. Remove the protective panel that covers the AC input terminal block TB1, and then connect the input AC power lines into terminal block TB1. Connect the hot wire to terminal 5; connect the neutral wire to terminal 4. Connect the AC input ground wire to the grounding stud provided on the mounting plate. Replace the protective panel.

CAUTION: Be sure that the batteries are connected per Step 1 above BEFORE applying power and turning on the unit.

5. Turn ON the AC line circuit breaker. Turn ON the LVPS-40 On/Off switch. The red AC power on LED (CR2) and either the red Fast Charge LED (CR17) or green Float LED (CR18) will light. The LVPS-40 is now operational.

2.2.6 Close Circuit Television System (CCTV)

Closed Circuit Television is utilized to assist in detection and assessment of intrusion attempts. It will also provide viewing of elevator areas from the security and watch command areas, for visual assessment before granting access to a person without an access card. The cameras will be viewed on individual monitors at the security office. At the security office the cameras will be multiplexed and recorded on a VCR. A monitor will also be provided to view playback. A monitor at each watch command station will have sequencing views of all the cameras. The following paragraphs provide descriptions of the individual components that comprise the CCTV system.

2.2.6.1 Cameras, Lenses and Housings

The VC2150-24 and V3.5-8VFI-2 lens will be assembled and mounted in the ceiling in the V8606H-XD housing (per the Manufacturer's instructions).

Model V8606H-XD Housing consists of a miniature camera enclosure, constructed of two major parts: a housing, into which the camera and lens combination is bracket-mounted, and a tamperproof hinged cover with a lens viewing

window. The upper steel housing measures 7.0 x 10.5 x 4.4 inches and the lower plastic housing has a very shallow profile, providing an inconspicuous presence in the area under observation. The lower housing is hinged for easy access to the camera and is provided with a tamperproof screw for security.

A duplex outlet is to be installed at each camera location. The CCTV Wiring table is shown below.

TABLE 2-8. CCTV WIRING

From		To			
Device	Location	Device	Location	Wire #	Wire
Camera 1	Hall Barclay	V 210DA Distribution AMP 1	RM 23-18	201	RG-59/U COAX
Camera 2	Hall Barclay	V 210DA Distribution AMP 2	RM 23-18	202	RG-59/U COAX
Camera 3	Hall Freight	V 210DA Distribution AMP 3	RM 23-18	203	RG-59/U COAX
Camera 4	Hall Freight	V 210DA Distribution AMP 4	RM 23-18	204	RG-59/U COAX
Camera 5	Elev. Lobby	V 210DA Distribution AMP 5	RM 23-18	205	RG-59/U COAX
Camera 6	Elev. Lobby	V 210DA Distribution AMP 6	RM 23-18	206	RG-59/U COAX
Video Switcher	RM 23-18	V 210DA Distribution AMP 7	RM 23-50	207	RG-59/U COAX
V 210DA Distribution AMP 7	RM 23-50	Watch Comm. Monitor 1	RM 23-52	208	RG-59/U COAX
V 210DA Distribution AMP 7	RM 23-50	Watch Comm. Monitor 2	RM 23-52	209	RG-59/U COAX
V 210DA Distribution AMP 7	RM 23-50	Watch Comm. Monitor 3	RM 23-52	210	RG-59/U COAX

Notes:

110 VAC duplex Outlet at each camera location

2.2.6.2 Distribution Amplifiers

The V210DA Distribution Amplifier provides a maximum of six video outputs, each equal to the single video input, to be used for operation of other video equipment when looping a single input more than five times. Circuitry with individual and isolated complementary transistor pairs provides power for several 75-ohm loads. The amplifier circuitry is housed in the Phase Eight Module, which is designed for installation in the Phase Eight Card Cage Enclosures.

The VP8RK Card Cage is a durable and compact racking system designed especially to house up to eight, single-position, Phase Eight Modules. The card cage features cooling vents for air circulation and guiding tracks for simple slide-in installation of the Phase Eight modules. Matching snap-on end caps are furnished with the VP8RK to cover card cage mounting hardware.

Each of the card cage will be mounted in the console in Room 23-18.

2.2.6.3 Monitors

The VM5093 Monochrome Closed-Circuit Video Monitors produce high-resolution (1000 lines center), high-contrast pictures on a 9-inch diagonal screen. A power transformer provides circuit isolation from the AC line. The monitor is housed in an enameled steel cabinet and can be single- or double-mounted in a standard 19-inch rack. Front panel controls include brightness, contrast, vertical hold, horizontal hold and AC power on/off.

The VM5093RK and VM5093RK-1 rack mount kits allow for double or single rack mounting, respectively.

Seven monitors will be mounted in the console in Room 23-18. The remaining 3 monitors will be installed in Room 23-52.

2.2.6.4 CCTV Switcher

The switchers in this series are designed to provide flexibility and expandability. Up to seven slaves with a terminated master can be cascaded in one Phase Eight card cage, providing 32 camera inputs. All models feature dual output, allowing the operator to select camera positions for viewing on the "HOLD" monitor while the switching sequence of all cameras continues on the "SCAN" monitor. The switchers have a built-in self-check routine.

The card cages will be mounted in the console in Room 23-18.

2.2.6.5 Video Recorder

The VCR405 time-Lapse Video Cassette Recorder is designed specifically for the needs of CCTV recording. The VCR will be rack mounted (utilizing the VCR401RK rack mount kit) in the console in Room 23-18.

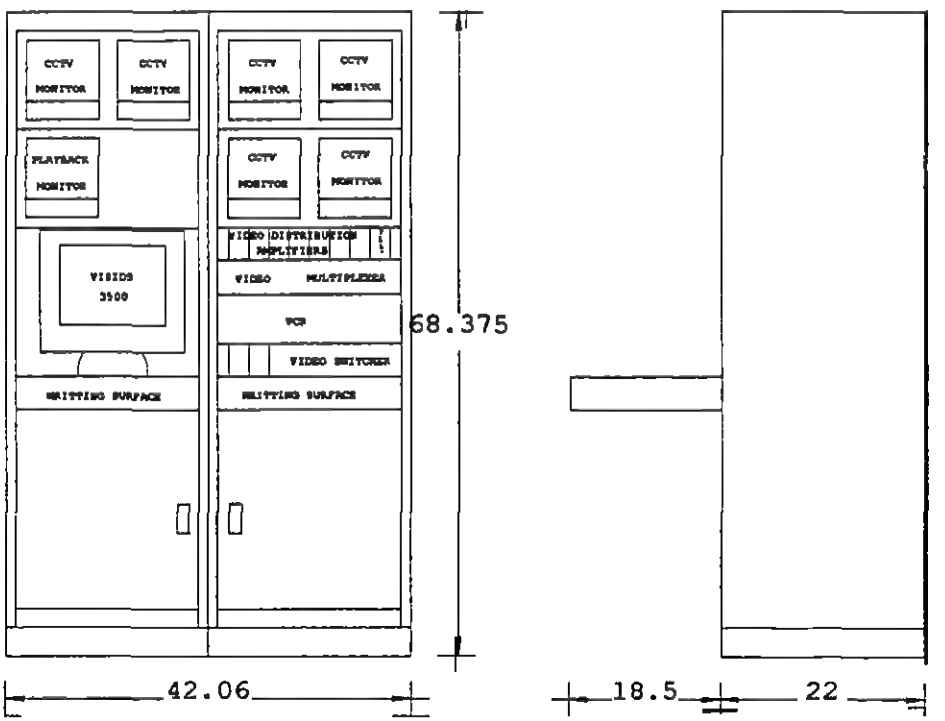
2.2.6.6 Video Multiplexer

The video multiplexer allows multiple cameras to be recorded on one VCR with little loss of information from each camera.

The multiplexer will be mounted in the console in Room 23-18.

2.2.6.7 Security Console

The security console will house the VISIDS 3500 main terminal, CCTV Monitors, Video Multiplexer, Distribution Amplifiers, VCR, and the Video switcher. This will be located in room 23-18. The console configuration is shown in below.



2.3 Specific Materials to be supplied

The following list of equipment is to supplied by Vikonics, Inc. and installed per the Manufacturer's instructions. This list does not include wire, installation materials, etc. which are to be supplied by the Contractor.

TABLE 2-9. ELECTRONIC SECURITY BILL OF MATERIALS

Model	Description	Qty	Manufacturer
VISIDS 3500 (w/ 15" monitor)	Main Security CPU	1	Vikonics
VISIDS 3550 (w/ 15" monitor)	Terminal CPU (workstation)	3	Vikonics
TAC/NCM-B	Front End Processor	Inc.	Vikonics
VP-3570	Network Hub	1	Vikonics
VP-2260	Multiplexer	3	Vikonics
VP-3110	Dot Matrix Printer	2	Vikonics
VRU-2004	Card Reader Interface	5	Vikonics
VP-2508	8 Zone ACS Panel	4	Vikonics
VP-2216	16 Zone Alarm Monitor Panel	1	Vikonics
VP-2232	32 Zone Alarm Monitor Panel	1	Vikonics
LVPS-40	Power Supply	2	Vikonics
VP-1064	Intelligent Keypad	4	Vikonics
VRP-5310	Proximity Reader	14	Vikonics
VRP-5310 + VRI-2130	Proximity Reader w/Keypad	5	Vikonics
V2000-T	Transformer	9	Vikonics
VA-040	Exit Button	8	Vikonics
VA-034	Door Contact	57	Vikonics
VA-04-0470	BMS w/ Resistor	1	Vikonics
VIR-1000	Motion Detector	15	Sentrol
VA-055	End of Line Resistor Network	72	Vikonics
VCP-1365	Access Cards	200	Vikonics
Monarch	Photo Badging System	1	Vikonics
BK240, B401	Smoke Detector & Base	1	System Sensor
US-HUB2A	Duress Switch	1	United Security Prods
VA-FA416	Duress Receiver	3	Inovonics
VA-FA204	Portable Duress Alarm	3	Inovonics
VA-VIB	Vibration Sensor	1	Potter Electric
	Console	1	Vikonics
	Duct Alarms		Vikonics

* +10%, -15%@ 60 Hz.

The following list equipment is to supplied by Vikonics, Inc. and installed per the Manufacturer's instructions. This list does not include wire, connectors, installation materials, etc. which are to be supplied by the Contractor.

TABLE 2-10. CCTV BILL OF MATERIALS

Model	Description	Qty	Manufacturer
VC2150-24	B/W Camera	6	Vicon Industries
VC24PS-1	Power Supply (for VC2150-24 Camera)	6	Vicon Industries
V3.5-8VFI-2	Lens	6	Vicon Industries
V8606H-XD	Indoor Ceiling Housing	6	Vicon Industries
V8606HXD-ACP	Adjustable Ceiling Panel	6	Vicon Industries
VCR405	VCR	1	Vicon Industries
VCR401RK	Rack Mount Kit	1	Vicon Industries
VP8RK	Rack	2	Vicon Industries
V1504AT-M	Switcher (Master)	1	Vicon Industries
V1504AL-S	Switcher (Slave)	1	Vicon Industries
V210DA	Distribution Amplifier	7	Vicon Industries
VM5093	Monitor	10	Vicon Industries
VM5093-RK	Rack Mount Kit for Monitor (dual)	3	Vicon Industries
VM5093RK-1	Rack Mount Kit for Monitor (single)	1	Vicon Industries
V816SB-EC	Video Mux	1	Vicon Industries

The items listed in Tables 2-9 and 2-10 will be purchased from:

Vikonics, Inc.
370 North Street
Teterboro, NJ 07608

Phone: 201-641-8077
Fax: 201-641-7728

The cost for these materials is $90,000.00. This price includes Technical Support, Calibration, System Certification, Database Entry and two days of training; these tasks will be performed by Vikonics personnel.

3.0 Electronic Security Tasks

3.1 Electronic Security Wiring Requirements

All wiring is to conform to applicable building codes. All wires are to be permanently marked with the wire numbers shown on the wire lists.

3.2 CCTV Mounting and wiring

The contractor is responsible for installation and test of all CCTV equipment. This includes, but is not limited to, testing video output and monitor input.

TABLE 3-1. CCTV WIRING

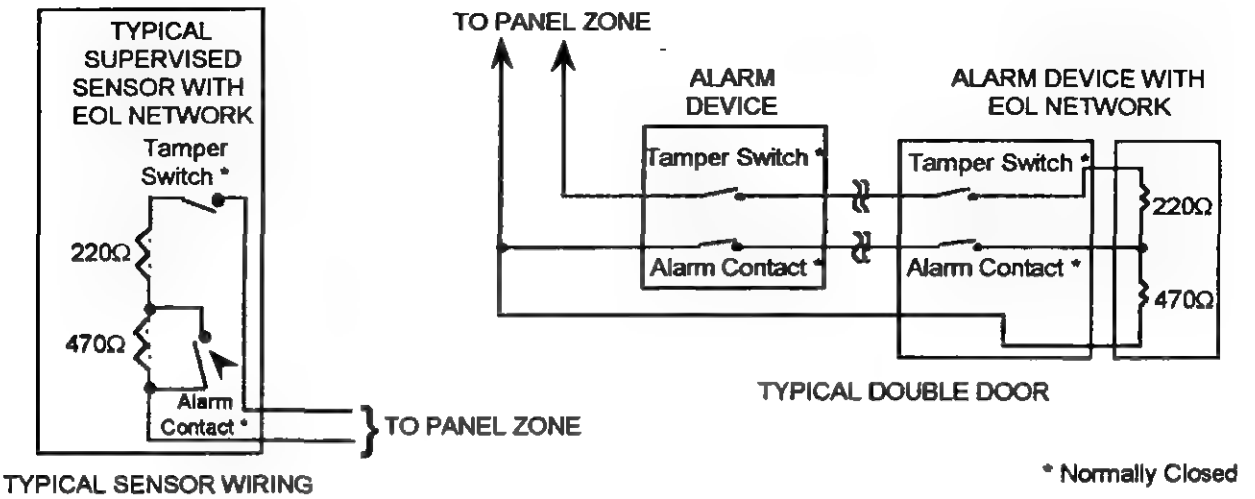
From		To			
Device	Location	Device	Location	Wire #	Wire
Camera 1	Hall Barclay	V 210DA Distribution Amp 1	RM 23-18	201	RG-59/U COAX
Camera 2	Hall Barclay	V 210DA Distribution Amp 2	RM 23-18	202	RG-59/U COAX
Camera 3	Hall Freight	V 210DA Distribution Amp 3	RM 23-18	203	RG-59/U COAX
Camera 4	Hall Freight	V 210DA Distribution Amp 4	RM 23-18	204	RG-59/U COAX
Camera 5	Elev. Lobby	V 210DA Distribution Amp 5	RM 23-18	205	RG-59/U COAX
Camera 6	Elev. Lobby	V 210DA Distribution Amp 6	RM 23-18	206	RG-59/U COAX
Video Switcher	RM 23-18	V 210DA Distribution Amp 7	RM 23-50	207	RG-59/U COAX
V 210DA Distribution Amp 7	RM 23-50	Watch Comm. Monitor 1	RM 23-52	208	RG-59/U COAX
V 210DA Distribution Amp 7	RM 23-50	Watch Comm. Monitor 2	RM 23-52	209	RG-59/U COAX
V 210DA Distribution Amp 7	RM 23-50	Watch Comm. Monitor 3	RM 23-52	210	RG-59/U COAX

Notes:
110 VAC duplex Outlet at each camera location

3.3 Sensor Mounting and Wiring Requirements

Each type of sensor to be provided and installed is identified in this section. End of line resistors with each sensor or string of sensors. The EOL resistor network is to be wired as shown below.

FIGURE 3-1. END OF LINE RESISTOR WIRING



3.3.1 Balanced Magnetic Door Contacts

Balanced magnetic switch (BMS) door contacts will be installed on the doors shown on the drawings. The BMS consists of a magnet that is mounted to the door leaf and a magnetic switch that is mounted to the doorframe. Neither the switch nor the magnet shall be accessible from the unsecure side of the door. The BMS is to be mounted at the top of the door and frame at the edge opposite the hinges. The wires from the BMS are to be extended in conduit to a junction box located above the door and in the area between the dropped ceiling and the next floor deck. The junction box is to be within the secure area. The contractor shall verify that the BMS changes from a normally closed state (with the door closed) to an open state, when the door has been opened 2" or less. This is measured from the doorframe to the edge opposite the hinges. Wiring information is shown in section 3.5.

3.3.2 Motion Detectors

Sentrol Model 6157 motion detectors are to be installed, per the manufacturer's instructions, in the locations indicated on Drawing 038L002 and wired per Table 3-3. The sensors detection pattern is to be concentrated in the direction of normal room entry. Install EOLs per Figure 3-1. After mounting and installation of wiring, apply DC power and perform a walk test to verify proper operation. Using an ohm meter, verify resistance change of 470Ω at panel end of sensor wiring. Connect wires to proper zone on alarm panel (see Riser Diagram 038Z001 and the paragraphs on Alarm Zone Connections in Section 2).

3.3.3 Smoke Detectors

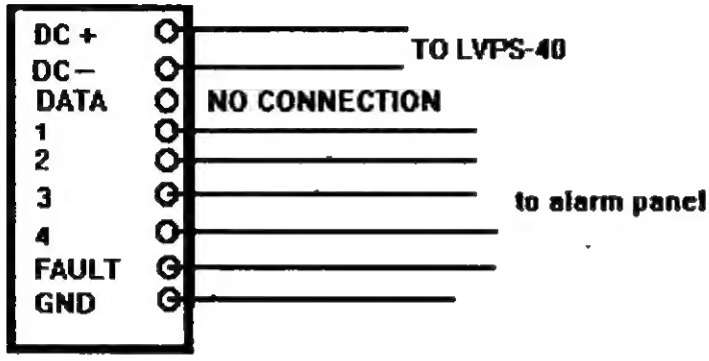
A System Sensor Model BK2400 smoke detector and Model B401 base are to be installed and mounted in the center of Room 23-16 per the manufacturer's instructions. Install EOLs per Figure 3-1. After mounting and installation of wiring, apply DC power and perform a walk test to verify proper operation. Using an ohm meter, verify resistance change of 470Ω at panel end of sensor wiring. Connect wires to proper zone on alarm panel (see Riser Diagram 038Z001 and the paragraphs on Alarm Zone Connections in Section 2).

3.3.4 Duress Switch

A United Security Products Model HUB2A duress switch is to be installed at the Receptionist's desk. Install EOLs per Figure 3-1. After mounting and installation of wiring, apply DC power and perform a walk test to verify proper operation. Using an ohm meter, verify resistance change of 470Ω at panel end of sensor wiring. Connect wires to proper zone on alarm panel (see Riser Diagram 038Z001 and the paragraphs on Alarm Zone Connections in Section 2).

3.3.5 Duress Receiver

Three Inovonics Model FA416 duress receivers are to be installed in Rooms 23-07, 23-13, and 23-53 in the locations indicated on Drawing A-23-3. Wires are to be run back to the Alarm Panel per Table 3-3 and terminated in conjunction with Riser Diagram 038Z001 and the paragraphs on Alarm Zone Connections in Section 2. One pair of wires will supply 12 VDC from the LVPS-40 to the receivers. Two pair of wires will connect to the four (4) outputs from the receivers. The remaining pair will be connected to the fault and ground terminal on the receiver. Continuity is to be tested on all wiring. Vikonics will program the units.



3.3.6 Portable Duress Alarm

Three Inovonics Model FA204 portable duress alarms will be supplied. No installation is required. Programming will be done by Vikonics.

3.3.7 Duct Alarms

3/8" wooden dowels are to be installed in AC ducts as indicated on Drawing 038L005. The dowels are installed by drilling holes through opposite sides of the duct. The hole size should accommodate a rubber grommet with an I.D. of 3/8. The wooden dowel is placed through the holes with the embedded wire sticking out of both ends. Multiple dowels are connected in series (using wire nuts) with the two output wires wired to the EOL as shown in Figure 3-1 ("wire" replaces "alarm contact".) The wiring back to the panels is shown in Table 3-3. When the wiring is completed, test for 470Ω resistance change at the panel end of the wiring when one of the wire nut connections is opened versus closed.

3.3.8 Vibration Sensors

A vibration sensor (manufacturer – Potter Electric Signal, Model EVD-S) is to be installed in Room 23-16. A total of four EVD-P pickup units will be supplied for installation on each of the four walls in Room 23-16. These pickup units must be mounted directly to the steel plates prior to concealment. The EVD-P sensors are wired back to the EVD-S per manufacturer's instructions. EOLs are installed on alarm relay connectors of the EVD-S per Figure 3-1. Using an ohm meter, verify resistance change of 470Ω at panel end of sensor wiring.

3.5 Card Reader and Alarm Wiring Requirements

The wiring required between the hardware at a security door and either the alarm panel or card reader interface is shown in the following table.

TABLE 3-2. CARD READER AND ALARM WIRING REQUIREMENTS

DOOR NO.	DOOR LOCATION	Door Type	Wire Req.	wire #	To Panel	Panel Location	door Model
01A	EMPLOYEE ENTRANCE	A	6 PR 22 AWG SHIELDED	10	CRI B	RM 23-50	Insulguard HM544 series
			2PR 18AWG SHIELDED	11			Keypad & Reader
01B	MAIN ENTRANCE	A	6 PR 22 AWG SHIELDED	12	CRI B	RM 23-50	Insulguard ICDS series
			2PR 18AWG SHIELDED	13			
02A	EOC LEFT	A	6 PR 22 AWG SHIELDED	1	CRI A	RM 23-50	
			2PR 18AWG SHIELDED	2			
02B	EOC RIGHT	A	6 PR 22 AWG SHIELDED	40	CRI E	RM 23- 18	Keypad & Reader
			2PR 18AWG SHIELDED	41			
03	MAYOR'S SUITE A/V RM	B	1 PR 18 AWG SHIELDED	321	AMP31-1	RM 23-18	Keypad & Reader
04	MAIN CONF. ROOM	A	6 PR 22 AWG SHIELDED	20	CRI C	RM 23- 18	Gaffco G203 series
			2PR 18AWG SHIELDED	21			
05	MAYOR'S SUITE	D	6 PR 22 AWG SHIELDED	30	CRI D	RM 23- 18	Insulguard ICDS series
			2PR 18AWG SHIELDED	31			
09	1ST DEP. DIRECTOR	A	6 PR 22 AWG SHIELDED	32	CRI D	RM 23- 18	
			2PR 18AWG SHIELDED	33			
10	INSIDE CONF. ROOM	A	6 PR 22 AWG SHIELDED	42	CRI E	RM 23- 18	Overly tempest series 60
			2PR 18AWG SHIELDED	43			Keypad & Reader
13	EXECUTIVE SUITE MAIN	D	6PR 22 AWG SHIELDED	34	CRI D	RM 23-18	Gaffco G203 Series
			2PR 18AWG SHIELDED	35			
15	COMMISSIONER'S SUITE	A	6 PR 22 AWG SHIELDED	36	CRI D	RM 23-18	Gaffco G203 Series
			2PR 18AWG SHIELDED	37			Keypad & Reader
16	VAULT DOOR	C	1 PR 18 AWG SHIELDED	341	ACS 34-1	RM 23-16	Overly Class 5 vault door
17	LIFRIERI'S OFFICE	A	6 PR 22 AWG SHIELDED	44	CRI E	RM 23- 18	Keypad & Reader
			2PR 18AWG SHIELDED	45			
18	SECURITY RM 23-18	B	1 PR 18 AWG SHIELDED	327	AMP 31-7	RM 23- 18	
20	CENTRAL FILES DOOR	B	1 PR 18 AWG SHIELDED	317	AMP 30-7	RM 23- 18	
21C	UPPER RIGHT HALL	E	6 PR 22 AWG SHIELDED	22	CRI C	RM 23- 18	
			2PR 18AWG SHIELDED	23			
23	LAN ROOM DOOR	A	6 PR 22 AWG SHIELDED	46	CRI-E	RM 23- 18	
			2PR 18AWG SHIELDED	47			
24	STORAGE AREA	B	1 PR 18 AWG SHIELDED	257	AMP 9-7	RM 23-50	

35	GIS COORD OFFICE DR	B	1 PR 18 AWG SHIELDED	315	AMP 30-5	RM 23-18	
40A	INNER RECEPTION	E	6 PR 22 AWG SHIELDED	24	CRI C	RM 23- 18	No reader control only
			2PR 18AWG SHIELDED	25			
40B	INNER RECEPTION	E	6 PR 22 AWG SHIELDED	26	CRI C	RM 23- 18	
			2PR 18AWG SHIELDED	27			
43	HVAC ROOM	G	1 PR 18 AWG SHIELDED	252	AMP 9-2	RM 23-50	
44A	LOWER RIGHT HALL	A	6 PR 22 AWG SHIELDED	16	CRI B	RM 23-50	
			2PR 18AWG SHIELDED	17			
48B	CONF HALL UPPER	A	6 PR 22 AWG SHIELDED	3	CRI A	RM 23-50	
			2PR 18AWG SHIELDED	4			
52	WATCH COMMAND	A	6 PR 22 AWG SHIELDED	5	CRI A	RM 23-50	
			2PR 18AWG SHIELDED	6			
54A	FRT ELEVATOR UPPER	F	6 PR 22 AWG SHIELDED	7	CRI A	RM 23-50	
			2PR 18AWG SHIELDED	8			
54B	FRT ELEV. LOBBY LOWER	F	6 PR 22 AWG SHIELDED	14	CRI B	RM 23-50	
			2PR 18AWG SHIELDED	15			
55	CENTER STORAGE	B	1 PR 18 AWG SHIELDED	301	AMP 29-1	RM 23- 18	
57	COMM CLOSET B	G	1 PR 18 AWG SHIELDED	253	AMP 9-3	RM 23-50	
58	ELEC CLOSET B	B	1 PR 18 AWG SHIELDED	254	AMP 9-4	RM 23-50	
61	STAIR #2	B	1 PR 18 AWG SHIELDED	302	AMP 29-2	RM 23- 18	
62	TELCO CLOSET C	G	1 PR 18 AWG SHIELDED	303	AMP 29-3	RM 23- 18	
63	COMM CLOSET C	G	1 PR 18 AWG SHIELDED	304	AMP 29-4	RM 23- 18	
64	ELECTRICAL CLOSET C	B	1 PR 18 AWG SHIELDED	305	AMP 29-5	RM 23- 18	
67	COMM. ROOM D	G	1 PR 18 AWG SHIELDED	311	AMP 30-1	RM 23- 18	
68	FAN ROOM	G	1 PR 18 AWG SHIELDED	312	AMP 30-2	RM 23- 18	
69	ELECTRICAL CLOSET D	G	1 PR 18 AWG SHIELDED	308	AMP 29-8	RM 23- 18	
70	TELCO CLOSET D	G	1 PR 18 AWG SHIELDED	307	AMP 29-7	RM 23- 18	
71	ELEV. MACHINE ROOM	B	1 PR 18 AWG SHIELDED	306	AMP 29-6	RM 23- 18	
73	COMM. CLOSET A	G	1 PR 18 AWG SHIELDED	256	AMP 9-6	RM 23-50	
74	ELEC CLOSET A	B	1 PR 18 AWG SHIELDED	255	AMP 9-5	RM 23-50	
75	TELCO CLOSET A	G	1 PR 18 AWG SHIELDED	262	AMP 10-2	RM 23-50	
76	TELCO CLOSET B	B	1 PR 18 AWG SHIELDED	261	AMP 10-1	RM 23-50	
	STAIR #1	B	1 PR 18 AWG SHIELDED	251	AMP 9-1	RM 23-50	
	RISER ROOM DOOR		1 PR 18 AWG SHIELDED	355	ACS 50-5	Radio Room	
	FUEL TANK HATCH		1 PR 18 AWG SHIELDED	361	ACS 52-1	RM 7-XX	
	RADIO ROOM DOOR	B	1 PR 18 AWG SHIELDED	351	ACS 50-1	Radio Room	
	GENERATOR ROOM	G	1 PR 18 AWG SHIELDED	362	ACS 52-2	RM 7-XX	
	WATER STORAGE RM	G	1 PR 18 AWG SHIELDED	363	ACS 52-3	RM 7-XX	

Sensor Wire Requirements

TABLE 3-3. SENSOR WIRING REQUIREMENTS

Room	Sensor location	Wire Req.	Wire #	To Panel	Panel Location
23-05	MAYOR'S SUITE MOTION	2 PR 18 AWG SHIELDED	322	AMP 31-2	RM 23- 18
23-07	DURESS RECEIVER #1	2 PR 18 AWG SHIELDED	331	AMP 32-1	RM 23- 18
23-07	DURESS RECEIVER #1	2 PR 18 AWG SHIELDED	332	AMP 32-1	RM 23- 18
23-09	IST DEP. DIRECTOR MOTION	2 PR 18 AWG SHIELDED	323	AMP 31-3	RM 23- 18
23-11	COMMISH VEST. MOTION	2 PR 18 AWG SHIELDED	324	AMP 31-4	RM 23- 18
23-13	DURESS RECEIVER #2	2 PR 18 AWG SHIELDED	333	AMP 32-2	RM 23- 18
23-13	DURESS RECEIVER #2	2 PR 18 AWG SHIELDED	334	AMP 32-2	RM 23- 18
23-15	COMMISH OFFICE MOTION	2 PR 18 AWG SHIELDED	325	AMP 31-5	RM 23- 18
23-16	VAULT PIR	2 PR 18 AWG SHIELDED	342	ACS 34 -2	RM 26-16
23-16	VIBRATION SENSOR	2 PR 18 AWG SHIELDED	343	ACS 34 -3	RM 23-16
23-16	SMOKE DETECTOR	2 PR 18 AWG SHIELDED	344	ACS 34 -4	RM 23-16
23-17	LIFRIERI'S OFFICE MOTION	2 PR 18 AWG SHIELDED	326	AMP 31-6	RM 23- 18
23-18	SECURITY MOTION	2 PR 18 AWG SHIELDED	328	AMP 31-8	RM 23- 18
23-20	CENTRAL FILES MOTION	2 PR 18 AWG SHIELDED	318	AMP 30-8	RM 23- 18
23-23	LAN ROOM MOTION	2 PR 18 AWG SHIELDED	314	AMP 30-4	RM 23- 18
23-35	GIS COORD OFFICE MOTION	2 PR 18 AWG SHIELDED	316	AMP 30-6	RM 23- 18
23-53	DURESS RECEIVER #3	2 PR 18 AWG SHIELDED	335	AMP 32-3	RM 23- 18
23-53	DURESS RECEIVER #3	2 PR 18 AWG SHIELDED	336	AMP 32-3	RM 23- 18
	FIRE PANEL	1 PR 18 AWG SHIELDED	258	AMP 9-8	RM 23-50
	MOTION #1 Radio Room	2 PR 18 AWG SHIELDED	352	ACS 50-2	Radio Room
	MOTION #2 Radio Room	2 PR 18 AWG SHIELDED	353	ACS 50-3	Radio Room
	AC UNIT Radio Room	1 PR 18 AWG SHIELDED	354	ACS 50-4	Radio Room
	MOTION WATER STORAGE	2 PR 18 AWG SHIELDED	364	ACS 52-4	RM 7-XX
23-40	Reception duress	1 PR 18 AWG SHIELDED	263	AMP 10-3	RM 23-50
23-10	CONFERENCE ROOM	1 PR 18 AWG SHIELDED	334	AMP 32-4	RM 23-18